CORPORATE FRAUD: AN EMPIRICAL ANALYSIS OF CORPORATE GOVERNANCE AND EARNINGS MANAGEMENT IN MALAYSIA

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The recent failures of corporations such as Enron, WorldCom and HIH Insurance, to name but a few, have heightened investor awareness of the need to not only evaluate company performance, but also to consider the possibility that financial statements may not be a true reflection of company results, as fraudulent activities may have occurred during the reporting period. Since parties who are external to the firm do not have access to pertinent information, they have to rely upon published financial and non-financial data in order to form an opinion regarding performance and/or the risk that fraudulent activities may have occurred. The objective of this study is to determine if published information contains critical factors that could indicate if a company is at risk of fraud. The prior literature shows a relationship between weak corporate governance and the occurrence of earnings management and/or fraudulent activities, although most if not all of this research relates to Western economies. The differences in institutional setting e.g. cultural values and legal environment in Malaysia would not give the same findings with the study in western economies. Composing of many ethnic, Malaysian is a multicultural country. With each ethnic group upholding its own culture, values and belief, business are conducted according each ethnic‘s culture. The results of this study could shed some light on the influence of institutional setting on corporate governance and earnings management practices. There is not much research on corporate fraud in Malaysia; therefore, this study will focus on the Malaysian economy and examine the relationship between corporate governance, earnings management and corporate fraud. Companies that were charged with accounting and auditing offences from year 2003 to 2007 were selected as the fraudulent sample. Data were collected for the year companies were charged with fraud and the year prior to that. Both univariate analysis and logistic regression analysis were carried out to determine the significant differences between fraudulent and non-fraudulent companies with respect to corporate governance characteristics and earnings

management indices. The results indicated that the size of the board and the percentage of institutional shareholdings had significant relationships with the likelihood of corporate fraud occurrences consistently across the two-year period studied. The results on earnings management showed only that the gross margin index had a significant relationship with the likelihood of corporate fraud consistently over the five-year period studied. The study also found that fraudulent companies adopted income increasing method in time of difficulty which is consistent with past study in other countries for gross margin (lower gross margin index). The results of this study will assist public, corporate and accounting policy makers in formulating more effective corporate governance mechanisms and financial reporting systems.

Keywords: Corporate fraud, fraud, economic crime, corporate governance, earnings management

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, MOST MERCIFUL.

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Chapter 1
Introduction to the Study

1.1 Introduction

Corporate fraud has significant financial and non-financial impacts on businesses. A survey conducted by PricewaterhouseCoopers (2007a) covering the 2005 to 2006 period showed that the average financial loss from fraud in Malaysia was US$173,303 per company. In addition to financial losses, the survey described non-financial losses resulting from corporate fraud, including damage to companies' brands or goodwill, loss of employee morale, damage to business relations with external parties (especially regulators) and decreases in the value of companies' shares. The repercussions of corporate fraud affect not only the companies and their shareholders, but also employment, social stability and the public at large. The reverberations of corporate fraud can be clearly seen in the cases of Enron, Worldcom, Parmalat and many others. Among those that suffer from corporate fraud are those that rely on published information to assess company performance and make investment decisions, such as stockholders and the general public. The serious consequences of corporate fraud have prompted strong control and monitoring mechanisms to be enacted, with the goal of overseeing corporate and management activities.

The separation of control and ownership increases the need for effective monitoring and control over management in order to protect the interests of investors and stakeholders (Fama & Jensen, 1983). Investor and stakeholder interests are usually protected using a three-tier system (Ramaswary, 2005). The first tier is the company's code of corporate governance; among others, the objectives of the code are to ensure that company policies are enforced, goals are met, performance is monitored and disclosures of company activities are adequate. The second tier is the company's internal control system. Here the objectives are to provide reasonable assurance of the effectiveness and efficiency of company operations, the reliability of financial reporting, and compliance with laws and regulations. The third tier is the regulators (e.g. the Securities Commission). Regulators are responsible for overseeing the company's reporting system and ensuring compliance with disclosure standards,

auditing standards, procedures and independence, ethical standards, and quality control standards.

Debates on the integrity of financial reporting have broken out as the number of reported corporate bankruptcy and fraud cases increases (Rezaee, 2005). This has become an issue that concerns regulators as well as users of financial reports (AICPA, 1993; Treadway Commission, 1987). Deficiencies in internal controls resulting from weaknesses in corporate governance structures have contributed to the increase in fraudulent activities (Beasley, 1996; Riahi-Belkaoui & Picur, 2000). The pressure to maintain the company's performance can become the motivation for managers to manipulate financial reports (Ramaswary, 2005). Riahi-Belkaoui and Picur (2000) indicate that management‘s ability to override internal controls is another contributing factor to fraud. As concerns about fraud increase, companies are being urged to fortify their internal control systems by strengthening their corporate governance.

The components of corporate governance include internal accounting controls, the board of directors, institutional investors, independent auditors and contracts with management (Archambeault, 2000). Studies on fraudulent financial reporting have found a significant relationship between certain corporate governance characteristics and incidence of fraud. Among those characteristics are: the independence of the board of directors, the chairman‘s dual role, the number of board members, the number of board meetings, the independence of the audit committee members, the number of audit committee meetings, institutional shareholding and multiple directorships held by directors (Abbott, Parker & Peters, 2002; Basilico, Grove & Cook, 2005; Beasley, 1996; Grove & Basilico, 2008). Fraud occurs when incentives (or pressures), opportunities and the ability to rationalize fraud co-exist (i.e. the fraud triangle) (Alvin Arens et al., 2007). Pressure to meet earnings forecasts and performance targets, as well as executive stock option schemes, become incentives to manipulate earnings (Ramamoorti & Olsen, 2007). This has been empirically established through studies on the relationship between earnings management/manipulation and fraudulent financial reporting (Beneish, 1999a; Dechow, Ge, Larson & Sloan, 2009; Grove & Basilico, 2008).

Most studies on the relationship between corporate governance, earnings management and corporate fraud were carried out in the United States. Therefore, the models,

characteristics and variables that were significant in those studies might not be significant in the Malaysian context due to differences in culture, the complexity of the economic environment and legislation (Coffee, 2005; Geiger & Laan Smith, 2010; Guan, Pourjalali, Sengupta & Teruya, 2005; Han, Kang, Salter & Yong, 2010; Haniffa & Cooke, 2002, 2005; Shu-Hui, 2006). Therefore, this research aims to establish whether the models, characteristics and variables of corporate governance and earnings management are significantly related to corporate fraud in Malaysia.

There have been few studies on corporate fraud and its relation to corporate governance and earnings management in Malaysia. One such study was by Hasnan, Abdul Rahman and Mahenthrian (2008), who analysed the management predisposition, motives, opportunities and earnings management involved in fraudulent financial reporting. Their study included certain corporate governance characteristics and earnings accruals as variables, and analysed factors that contributed to fraudulent financial reporting in Malaysia. Past studies on the relationship of the corporate governance and earnings management with respect to corporate fraud has yielded mixed results. This shows that the different settings or nature of the samples are influencing the characteristics, and the purposes of the governance and earnings management motives leading to inconsistent results. The nature of a sample refers to its characteristics, e.g. the country or industry, while the purpose of the governance refers to the role of corporate governance with respect to performance, audit fees, managing earnings or corporate fraud. Much of the research on this topic was carried out in Western countries and other Asian countries. Studies in the field of corporate fraud in particular are still lacking in Malaysia. Given Malaysia‘s unique environment (differences is cultural, legal and historical) and background, studying these characteristics in this country is important as the results could highlight differences in corporate governance characteristics between fraudulent and non-fraudulent companies. Such a study could reveal which corporate governance characteristics have a significant relationship with the likelihood of corporate fraud occurrences in Malaysia.

This study differs from Hasnan et al. (2008) in that it examines the effectiveness of certain key corporate governance characteristics in corporate fraud deterrence, as well as earnings management practices involved in corporate fraud (instead of using discretionary accruals, this study analysed earnings management through earnings

indices). Thus, the findings of this study could highlight the effectiveness, or ineffectiveness, of corporate governance characteristics and the relationship between earnings management and incidence of corporate fraud. Further, the findings of this study will highlight weather the corporate-published information is useful (in fraud detection), be it financial or non-financial information. Among the consumers of corporate-published information are minority shareholders who have to bear the cost of company losses (as a result of fraud) more than other users (Graham, Litan & Sukhtankar, 2002). Therefore, it is crucial for these users to know what published information could help them to assess if companies are at risk of corporate fraud. Certain corporate governance characteristics (i.e. non-financial information) and earnings management indices (i.e. financial information) were examined to fulfil the objectives of the study. Both sets of variables were tested to check for any significant differences between fraudulent and non-fraudulent companies and their relationship with corporate fraud occurrences.

This chapter continues with a discussion of the research problem and the significance of this study. This is followed by the research objectives and research questions. The final part of the chapter outlines the organization of the study.

1.2 Research Problem

This study was motivated by the following factors. First is the growing concern over the increase in fraud cases in Malaysia. The PricewaterhouseCoopers and KPMG economic crime or fraud surveys from 2000 to 2009, as well as the reported cases in the Malaysian Securities Commission Enforcement Releases, have indicated the seriousness of this issue statistically. This trend becomes more problematic as the losses suffered threaten the ability of fraudulent companies to continue their business activities and be profitable. Thus, it affects the shareholders and stakeholders‘ wealth, as well as the stability of society as a whole. The PwC (2007) crime survey for the period of 2003 to 2007 shows that fraud remains a serious problem in every country around the world. The survey indicates that the five most common frauds committed are asset misappropriation, accounting fraud, corruption and bribery, money laundering, and IP infringement. In terms of the frequencies of these crimes, the survey shows that asset misappropriation has the highest reported rate (30%),

followed by IP infringement (15%), corruption and bribery (13%), accounting fraud (12%), and money laundering (4%).

In terms of average losses suffered due to fraud, the survey indicates that average losses from IP infringement are the highest, with a value of US$1,900,993, followed by accounting fraud (US$1,477,775), asset misappropriation (US$1,280,325), corruption and bribery (US$882,303), and money laundering (US$253,746). In addition, the PwC (2009) global economic crime survey shows a significant increase in the frequencies of reported fraud, except for IP infringement in the 2007 PwC survey. The PwC 2009 survey indicates that asset misappropriation remains the most reported fraud at 67%, followed by accounting fraud (38%), bribery and corruption (27%), IP infringement (15%), and money laundering (12%). The KPMG fraud survey 2009 gives a similar result, showing that fraud remains widespread throughout the world. These statistics show that the financial impacts of fraud are made far more damaging by financial reporting fraud. Corporate fraud, in particular accounting or financial reporting fraud, is at the centre of attention in this study.

Secondly, increasing concern is being expressed over the integrity of financial reports and the quality of reported earnings when a company is being charged with fraud. Market participants such as shareholders, stakeholders and investors rely upon companies‘ financial reports when making decisions about their investments. The results of the Malaysia Securities Commission Enforcement Releases (MSCER) highlight the fluctuating trend in financial statement fraud committed by insiders who provide the information published in annual reports. Since the only information available to outsiders is that which companies provide in published annual reports, they have to make the best use of this source of information.

The third factor is the concern over the fact that many fraud cases were detected by accident or through tips from whistle-blowers (PricewaterhouseCoopers, 2007b; Ramaswary, 2005), which casts doubt on the effectiveness of auditing in detecting fraud. This has increased misgivings about the effectiveness of corporate governance structures and the consequences of their inefficiency. The main objective of corporate governance is to govern and monitor the company‘s activities and decision making to ensure it acts responsibly and efficiently. A good and effective corporate governance structure instils confidence in investors; if it fails in this objective, it has lost its

purpose. By identifying which corporate governance characteristic that is effective in governance, the public could use it as indicator of company good governance that lead to better control and monitoring of company's financial reporting, thus reduces the likelihood of corporate fraud.

The Asian economic crisis in 1997-1998 had an impact on Malaysian business partly due to weak corporate governance (Khas, 2002; Kim, 1998). As concluded by scholars, weak governance systems have also contributed to the increase in fraud cases (Basilico et al., 2005; Beasley, 1996; Beasley, Carcello, Hermanson & Lapides, 2000). The Asian economic crisis prompted the development of the Malaysian Code of Corporate Governance, which dictates mandatory practices for public companies. The Malaysian Code of Corporate Governance was largely culled from the UK Cadbury Report 1992 and the Hampel Report 1998 (Ow-Yong & Guan, 2000). Adopting a system from another country is not without its issues. The business, cultural and legal environment in Malaysia is different from the UK, particularly in terms of shareholding ownership. This may alter the effectiveness of governance on corporate performance in Malaysia (Haniffa & Hudaib, 2006), as governance characteristics that are effective in the UK may not be effective in the Malaysian context. This raises questions about the effectiveness of the adopted system, specifically in respect to fraud deterrence. Differences in a country's business environment and culture can have various effects on its financial reporting (Nobes & Parker, 2008). The way earnings are managed and reported also differs between countries (Desender & Castro, 2008; Doupnik, 2008; Geiger & Laan Smith, 2010; Guan et al., 2005; Han et al., 2010).

Research on the connection between corporate governance, earnings management and corporate fraud in Malaysia is still lacking. Researchers in this area are concentrated in the Western world, and some Asian countries such as China have presented mixed results on the relationship of corporate governance characteristics and earnings management with corporate fraud. Therefore, there is a need to study this topic in a Malaysian setting. Thus, this study analyses the relationship of certain key corporate governance characteristics with corporate fraud occurrences in Malaysia to better understand the effectiveness of these characteristics in reducing the likelihood of fraud, as well as the ability of earnings management variables to indicate if a company is at risk of fraud. Once they understand which corporate governance characteristics

are effective, companies could structure better and more efficient corporate governance. Effective and efficient governance would reduce the likelihood of corporate fraud and earnings manipulation.

Significance of the study

The increase in the number of fraud cases in Malaysia has seen more rules and regulations being imposed on the market, as well as rigorous enforcement actions by regulators. Corporate governance has been identified as an important control and governance mechanism in the capital market; hence, it was made mandatory for all companies to incorporate the adopted corporate governance framework. Therefore, this study is significant in examining the effectiveness of corporate governance at reducing the likelihood of corporate fraud, and the ability of earnings management indices to indicate if company is at risk of fraud. This study will add to the literature in this field and provide a unique multicultural dimension. The study will contribute important information for regulators on the effectiveness of adopting another country‘s framework, as well as recommendations for enhancing such a framework to suit the local environment and better detect what works and what does not. Moreover, this study will help the external users of published information detect which companies are at-risk of corporate fraud, thus assisting them in making better investment decisions. For company shareholders and other stakeholders, this study could assist in evaluating a company‘s performance and activities that are essential to protect their interest or investment. To auditors, this study could be considered a tool for evaluating the risk of corporate fraud.

Overview of the study

The main focus this study is to evaluate the usefulness of published information in highlighting the likelihood of corporate fraud. Information publish is vast and at times it too technical for the general users to understand and evaluate the impact on future performance. Therefore, it is impossible to study and analysed all of the information presented in the published report. The selection of corporate governance information is due to the role of governance in monitoring and controlling business activities. Thus, good and effective governance means good control and monitoring over business activities which extended to lowering the risk of likelihood of corporate fraud. Furthermore, the information is easily accessible and understood by the general

users. Financial information is the important to the users of financial statement. Hence the financial information is also selected for the analysis of this study. Calculating indices with not too complicated formula is much easier for the general users to understand, therefore this study analysed earnings management indices.

In evaluating the usefulness of this published information in highlighting the likelihood of corporate fraud, the information selected for this study (variables) is analysed to see its relationship to corporate fraud occurrences. This would highlight the variables that could indicate the risk of corporate fraud occurrences. For corporate governance variables, the analysis would indicate which variable decreases the likelihood of corporate fraud and which variable did not. This result would help in determining the effectiveness of the variables in fraud deterrence. These effective variables could become a tool in evaluating the risk of fraud which further could highlight the reliability of company‘s published information. The ineffective variables, though it does not reduces the likelihood of corporate fraud could also be used by the users of financial statement in assessing the healthiness of the published information. The ineffective variables could indicate a characteristic fraudster, which can be used as a guideline for assessing the reliability of information published. A majority of corporate fraud committed trough managing earnings, when the earnings is manage until it is no longer true and fair representation of company‘s performance. This study analysed earnings management indices with its relation to corporate fraud occurrences. The indices that indicate significant relationship with the likelihood of corporate fraud could be used is assessing the effectiveness of company‘s governance which would increases the reliability of information published.

In order to achieve the objective, the variables are analysed for both fraudulent and non-fraudulent companies (consistent with other study corporate or financial statement fraud). Fraudulent companies (company charge with fraud by Malaysian Securities Commission) from year 2003 to 2007 were selected for this study as well as non-fraudulent companies during the stipulated years. For corporate governance variables, data were collected for the year of fraud (the year company is charged with fraud) and the year prior to the year of fraud. Meanwhile, for earnings management data is collected from 4 years prior to the year of fraud to the year of fraud. The impact of earnings management to company does not happen overnight. The impact

can only be seen after some period of time (Dharan B.G. 2003). Therefore, this study analysed five years of financial data.

1.3 Research Objectives and Questions

The results of the PwC (2005, 2007b) fraud survey highlighted the problem of fraud in Malaysian business. The failure of auditors to detect fraud (Saksena, 2003) and the increasing number of company collapses resulting from fraud have put the effectiveness of corporate governance, as well as the integrity and reliability of financial reports, in question. This has decreased the usefulness of corporate-published information. It was hoped that the implementation of the Malaysia Code of Corporate Governance, which was made mandatory for all companies, would strengthen the integrity and reliability of financial reports. However, the problems remain, leading to doubts about the effectiveness of the adopted governance framework.

As discussed is the previous section, the implementation of a governance framework in a Malaysian context might face challenges due to the country‘s unique socio-economic, legal and cultural background. This study intends to address this issue by analysing key corporate governance characteristics and earnings management indices to determine the differences between fraudulent companies and non-fraudulent companies, as well as the relationship of the variables with corporate fraud. Thus, there are two main objectives in this study: to analyse the effectiveness of certain key corporate governance characteristics at reducing the likelihood of corporate fraud; and to examine the ability of earnings management indices to indicate if a company is at risk of corporate fraud.

Effective governance increases the relevancy and reliability of corporate reports. When determining the usefulness of reports, the information obtained must be relevant and reliable. To allow for an analysis of the usefulness of corporate-published information, two types of information were selected for this study: corporate governance and earnings. In order to distinguish between healthy and unhealthy practices of corporate governance and earnings, a control group (healthy companies) will also be studied (this data became the ‗benchmark‘ of healthy practices). Both groups‘ data were empirically tested and regressed; first to highlight the significant differences between both groups‘ practices, then to determine the significant

relationship between the practices and the likelihood of corporate fraud occurrences. Thus, the main study objectives will be met through the following sub-objectives:

i. Determine the significant differences between fraudulent and non-fraudulent companies with respect to corporate governance characteristics.
ii. Determine the significant relationship between corporate governance characteristics and corporate fraud occurrences.
iii. Determine the significant differences between fraudulent and non-fraudulent companies with respect to earnings management indices.
iv. Determine the significant relationship between earnings management indices and corporate fraud occurrences.

These objectives are addressed through the following research questions:

i. Are there any differences in the corporate governance characteristics of fraudulent and non-fraudulent companies?
ii. Which corporate governance characteristics have significant relationships with the likelihood of corporate fraud occurrences?
iii. Are there any differences in the earnings management indices of fraudulent and non-fraudulent companies?
iv. Which earnings management indices have significant relationships with the likelihood of corporate fraud occurrences?

1.4 Chapter Organization

The subsequent six chapters of the study are organized as follows:

Chapter two presents information on Malaysia‘s socio-economic background, capital market and financial reporting legislation. This chapter also presents an overview of corporate fraud in Malaysia.

The third chapter reviews the extant literature on issues of corporate fraud, corporate governance and earnings management. This chapter starts with a discussion of corporate fraud, which includes an examination of business risk and agency cost. This is followed by a definition of fraud and information on the nature and types of fraud, plus an exploration of issues relating to management fraud. The chapter continues with an overview of corporate fraud in Malaysia. The examination of corporate governance literature begins with an overview of corporate governance in Malaysia,

before moving on to past research on corporate governance. This section is followed by a description of the earnings management issue in Malaysia and past research on this topic.

The fourth chapter lays out the research framework and explains how the hypotheses were developed. This chapter defines and elucidates the variables selected for this study, which are corporate governance and earnings management.

The fifth chapter discusses the methodology and data used in the study. The focus of this chapter is on how the research was conducted in order to arrive at the findings and conclusions. The research process, including the settings, measurement procedures and data analysis methods, is described. The sampling method and selection of fraudulent and non-fraudulent companies are explained. A thorough discussion of the data selection, measurements and statistical analyses used to examine and test the variables is also included in this chapter. A description of the empirical testing of the univariate and logistic regression analyses closes out the chapter.

Chapter six discusses the findings of the research. This is the crux of the study, which lays out what was found by addressing the objectives and research questions stated in chapter one.

Chapter seven concludes the study with a summary of the significant findings, their implications, the study limitations and directions for future research.

Chapter 2
The Malaysian Socio-economic and Financial Reporting Environment

This chapter briefly covers the Malaysian socio-economic background to enhance understanding of how and why things are done in certain ways in Malaysia. The chapter then continues with a discussion on financial reporting, which looks at the Malaysian capital market environment and legislation, as well as the regulatory and enforcement agencies involved. The chapter continues with an overview of corporate fraud in Malaysia, while the last part focuses on Malaysian corporate governance.

2.1 Socio-economic Background

Malaysia, a well-diversified country with a population of 28.3 million,[1] is characterised as a multi-ethnic country. Only 8.2% of the total population is made up of non-citizens. The citizens of Malaysia are divided into two main groups known as the Bumiputera and non-Bumiputera.[2] The Bumiputera are the majority in Malaysia (67.4%), followed by Chinese (24.6%) and Indians (7.3%). Malay is the predominant ethnicity in the Bumiputera group. The three main ethnicities that shape the culture and socio-economy of Malaysia are Malays, Chinese and Indians.

Each ethnicity carries with it unique culture, values and beliefs. Malays are much influenced by Islam, while Chinese are influenced by the teachings of Buddha and Indians by Hinduism. These clear separations of culture, values and beliefs have major impacts on the way people conduct themselves, including in business and economic affairs (Haniffa & Cooke, 2002).

During the colonial era, Malaysian business and economics were controlled by Europeans and Chinese, while the Malays were more involved in administration and community establishments in villages. Indians were confined to working on plantation estates. The consequences of this clear stratification can be seen in the wealth of the Chinese, compared to the relative poverty of the Malays and Indians (Jesudason,

[1] Population Distribution and Basic Demographic Report 2010 by the Malaysia Department of Statistics (http//www.statistic.gov.my).
[2] Bumiputera refers to the Malay and other indigenous ethnic groups. Other than this the ethnic groups are non-Bumiputera, of which the majority are Chinese or Indian.

1989). The differences in cultural values and economic status have created social tension among the ethnic groups in Malaysia, which led to riots and conflict between Malays and Chinese in 1969. As a result of the riot the government launched the National Economic Policy (NEP) in 1971. The NEP aimed to create a Bumiputera commercial and industrial community in order to increase the Bumiputera economy. The NEP has seen Bumiputera given concessions in terms of grants, trade, education and jobs (Haniffa & Cooke, 2002). This is long term policy to increase the economics of Bumiputera and Non-bumiputera as a whole. The NEP has seen the government embarking on the export-oriented strategy by implementing the *"Look East policy"* and *"Malaysian Incorporated policy"*. NEP reduces the social tension amongst the races in Malaysia through the process of eliminating the identification of race with economic function and reducing the poverty level through increasing income level and jobs creation. It is the target of NEP to ensure that 30% of Malaysian economy is controlled by Bumiputeras but it did not attained its target. The NEP ended in year 1999. The government continue with its Second Outline Perspective Plan (OPP2) from 1999 to 2000 which sees the establishment of National Development Policy (NDP) to continue the objectives of NEP. The NDP vision among others is to develop knowledge based society. Wawasan 2020 (Vision 2020) was introduced in February 1991 that aims to achieve the status of developed country by the year 2020. Nevertheless, despite the government's efforts to help the Bumiputera, Chinese remain the major market players in the economy and continue to dominate the management and professional positions in Malaysia (Rowley & Bhopal, 2005).

2.2 Financial Reporting

As a business grows more complicated, a more comprehensive annual report is needed to fulfil the needs of the external users of financial and non-financial information. To protect the interests of shareholders and other stakeholders, published financial statements and annual reports should be reliable and relevant, as well as providing full and fair disclosure. Jonas and Blanchet (2000) state that approaches to assessing the quality of financial reporting can be classified into two categories: user needs and investor protection. The user needs category assesses the quality of financial reporting through its usefulness in decision making. On the other hand, the investor protection category assesses the ability of financial reports to provide shareholders with as much information as possible. In order to ensure full and fair

disclosure in corporate financial reports in Malaysia, the authorities have established rules, regulations and laws to govern financial reporting.

Corporate financial reporting in Malaysia is governed by the Malaysian Companies Act 1965, specifically the Ninth Schedule of the Act. Paragraph 3, section 166(A) of the Companies Act (1965) requires directors of companies to ensure that the preparation of accounts complies with accounting standards. Under section 169(15c), directors are required to state this compliance in their report. Section 174 of the Act requires auditors to state that the preparation of the company's accounts complies with Malaysian accounting standards. The aim of the Malaysian financial reporting environment is to provide relevant, reliable, fair and full disclosure of companies' finances for the benefit of the shareholders, minority interests and other stakeholders, and therefore compliance with the accounting standards was made mandatory by the Act.

To ensure compliance with the rules, regulations and Acts, regulatory agencies were set up to govern the conduct of companies and financial reporting in Malaysia. The agencies are: Bank Negara Malaysia (Malaysia Central Bank); Company Commission of Malaysia; Malaysia Accounting Standard Board (MASB) and Financial Reporting Foundation (FRF); Malaysia Institute of Certified Public Accountants (MICPA) and Malaysia Institute of Accountants (MIA); and Royal Malaysia Police (Commercial Crime Department). Each of these agencies has its own responsibilities in governing financial reporting in Malaysia. The following sections introduce these agencies.

Bank Negara Malaysia

Bank Negara Malaysia is the central bank of Malaysia. It was established on 26 January, 1959, under the Central Bank of Malaysia Ordinance 1958. The functions of the bank are carried out within the context of the broader goals of promoting economic growth and a high level of employment; maintaining price stability and a reasonable balance in the country's international payments position; eradicating poverty; and restructuring society. The bank issues currency keeps international reserves and safeguards the value of the ringgit. It is the banker and financial adviser to the government, the agency responsible for monetary policy and management of the financial system, and banker to the banks. Bank Negara Malaysia governs the conduct of the Malaysian banking and financial industry. (*Source: www.bnm.gov.my*)

Company Commission of Malaysia

The Company Commission of Malaysia is a statutory body that governs companies and businesses in Malaysia. It commenced operation on 16 April, 2002, as a result of the merger of the Registrar of Business and the Registrar of Companies Malaysia. The Company Commission of Malaysia is responsible for the management and enforcement of the following acts:

- Companies Act 1965 (Act 125)
- Business Registration Act 1956 (Act 197)
- Companies Trust Act 1949 (Act 100)
- *Akta (Larangan) Kumpulan Wang Kutu* 1971 (Act 28)[3]
- Any other subsidiary laws under any of the abovementioned acts, such as Companies Regulations 1966 and Business Registration 1957.

Section 17 of the Companies Commission of Malaysia Act 2001 provides that the functions of the Commission shall be as follows:

a) To ensure that the provisions of the Act and the laws specified in the First Schedule are administered, enforced, given effect to, carried out and complied with.

b) To act as an agent of the government and provide services including administering, collecting and enforcing payment of prescribed fees or any other charges under the laws specified in the First Schedule.

c) To regulate matters relating to corporations, companies and businesses in relation to the laws specified in the First Schedule.

d) To encourage and promote proper conduct amongst directors, secretaries, managers and other officers of a corporation, and self-regulation by corporations, companies, businesses, industry groups and professional bodies in the corporate sector in order to ensure that all corporate and business

[3] *Akta (Larangan) Kumpulan Wang Kutu (Wang Kutu Collection (Prohibition) Act*: Wang kutu is traditional money collection normally practiced by housewives. They collect a certain amount of money each month for a certain period depending on the number of contributors/members. Each month the money is collected by the contributor whose turn it is.

activities are conducted in accordance with established norms of good corporate governance.

e) To enhance and promote the supply of corporate information under any laws specified in the First Schedule, and to create and develop a facility whereby any corporate information received by, or filed or lodged with, the Commission may be analysed and supplied to the public.

f) To carry out research and commission studies on any matter relating to corporate and business activities.

g) To advise the minister generally on matters relating to corporations, companies and businesses in relation to the laws specified in the First Schedule.

h) To carry out all such activities and do all such things as are necessary or advantageous and proper for the administration of the Commission or for such other purposes as may be directed by the minister.

The Company Commission of Malaysia works together with other regulatory bodies and authorities such as the Insolvency Department of Malaysia, Bank Negara Malaysia, the Securities Commission of Malaysia and related government agencies to ensure that good corporate governance is practiced by the market players. (*Source: www.ssm.com.my*)

Malaysia Accounting Standard Board and Financial Reporting Foundation

Established under the Financial Reporting Act 1997, the MASB and the FRF became the new financial reporting regime. The MASB is an independent technical body whose primary objective is the setting of accounting standards and conceptual frameworks. The MASB is strongly influenced by the government through the Malaysian Finance Ministry. The body engages in the due process of standard setting, which is similar to the arrangement in other developed countries, particularly the US. The approved accounting standards are based on the international accounting standards and are customized to fit Malaysia‘s unique environment. In addition, the board also focuses on the implementation of Islamic financial reporting in Malaysia. All companies registered under the Malaysian Companies Commission are required to

prepare financial reports in accordance with the Malaysian financial reporting standards; this is mandatory under the Malaysian Companies Act 1965.

The FRF is a trustee body that oversees the performance of the MASB. The FRF is not responsible for standards setting, as this is the responsibility of the MASB. The important function of the FRF is providing feedback to the MASB on the development of accounting standards. Among the important members of the FRF are representatives from the Ministry of Finance, Bank Negara Malaysia, the Securities Commission, the Company Commission of Malaysia, Bursa Malaysia, the Malaysia Institute of Accountants and the Malaysia Accounting Standards Board. (*Source: www.masb.org.my*)

The Malaysia Institute of Certified Public Accountants and Malaysian Institute of Accountants

The MICPA, formerly known as the MACPA (Malaysia Association of Certified Public Accountants), is a professional accounting body established in 1958. The MICPA played a significant role in the research and development of accounting and auditing standards before the establishment of the MASB. The MICPA does not have the authority or power to regulate the accounting profession. The MIA was formed in 1967 under the Accounting Act 1967. In its early years the MIA‘s main function was simply to register accountants. In 1987, the MIA was reactivated and thereon started to have a role in issuing accounting standards. However, both bodies lack the power to enforce the standards. (*Source: www.micpa.org.my*)

Royal Malaysia Police (Commercial Crime Department)

The Royal Malaysia Police are actively involved in commercial crime investigation. When any fraud that falls under commercial crime occurs, the Royal Malaysia Police Commercial Crime Department will become involved. The main function of this department is to investigate, catch and prosecute white collar criminals who commit fraud, corruption or any type of commercial falsification, and cybercrime. Under this department there are a few important units, namely: anti-laundering unit, forensic accounting unit, financial investigation unit, corporate investigation unit, multimedia and cyber investigation unit, and forgery unit, which include credit card forgery. This

department has played its role effectively side by side with the Securities Commission in combating fraud. (*Source: www.ccid.my*)

2.2.1 Capital market legislation

According to Shim (2006), the Malaysian capital market has the following features:

i. The principle of corporate governance is similar to the UK Code of Corporate Governance.

ii. It recognizes the need for self-regulatory practices.

iii. A single-tier or unitary board model (no separation between the board‘s supervisory and management functions).

iv. The securities market is founded on corporate law in order to protect minority rights.

v. Company shares are mostly owned by families or by a few individuals.

The Malaysian capital market is very much concentrated on family-owned businesses. Lim (1981) and Zhuang, Edwards and Capulong (2001) indicate that in Malaysia company shares are largely owned by families. Often, the managers of these companies come from families that own a large percentage of shares. This has both positive and negative consequences for the other shareholders/stakeholders. One positive impact is that the manager will always strive to increase the value of the company, as it reflects in their family‘s earnings. However, a negative impact could be the issue of insider trading, in which the managers have more knowledge of the business performance, and would likely be the first to act upon any indication that the company is not performing well. In many cases, these insiders will sell off their shares before a market collapse, and the minority group‘s interest will be sacrificed, leading to them having to shoulder the losses. Thus, Malaysian capital market legislation has to make sure the interests of other shareholders, especially minority shareholders, are protected (Tam & Tan, 2007).

The Malaysian corporate sector has grown rapidly since the 1990s. The total market capitalisation of companies listed on the main and second boards of the Malaysian Stock Exchange growth annually is 40% on the average in the 1990s (KLSE, 2002). To date, the number of listed companies is still increasing, and therefore proper

regulation and legislation is needed to govern the capital market. In terms of legislation, the Malaysian capital market is governed by the Capital Market and Services Act 2007, Securities Industry (Central Depositories) Act 1991, Securities Commission Act 1993, Companies Act 1965, Offshore Companies Act 1990, and Labuan[4] Offshore Securities Industry Act 1995.

A number of regulatory agencies are responsible for ensuring all companies comply with legislation. Each of these agencies has its own duties and responsibilities in making sure the market runs smoothly and shareholders and other stakeholders' interests are not compromised. Figure 1 shows the regulatory framework of the Malaysian capital market. The Ministry of Finance is responsible for controlling the market, which is actively represented by the Malaysia Securities Commission and the Labuan Offshore Financial Service. The Labuan Offshore Financial Service is only responsible for governing the Labuan International Financial Exchange. The Securities Commission plays a more important role in the Malaysian capital market. It governs the Malaysian Stock Exchange (Bursa Malaysia Berhad) and enforces capital market rules and regulations.

Figure 2-1 The Regulatory Framework of the Malaysian Capital Market

Source: Bursa Malaysia (2009)

Space was intentionally left blank

[4] Labuan is the name of an island in Sabah, Malaysia where offshore trading is conducted.

Malaysian Securities Commission

The Malaysian Securities Commission was established on 1 March, 1993 under the Securities Commission Act 1993. It is a self-funding statutory body with investigative and enforcement powers. It reports to the Minister of Finance and its accounts are tabled annually in parliament. It has jurisdiction over Bursa Malaysia. The Securities Commission‘s ultimate responsibility is to protect investors. Apart from discharging its regulatory functions, it is also obliged by statute to encourage and promote the development of the securities and futures markets in Malaysia. It has direct responsibility to supervise and monitor the activities of market institutions and regulate all persons licensed under the Capital Markets and Services Act 2007. The securities commission administers the Securities Commission Act 1993; Capital Market and Services Act 2007; and Securities Industry (Central Depositories) Act 1991. Before the establishment of the Securities Commission, the Malaysian capital market was regulated by the Capital Issues Committee; Ministry of Finance; Prime Minister‘s Department Panel on Take-overs and Mergers and Foreign Investment Committee; Malaysia Companies Commission; Ministry of International Trade and Industry; and Bank Negara Malaysia (Malaysia Central Bank).

The Securities Commission has the power to enforce securities laws and the duty of disclosure under the abovementioned acts. It‘s investigative and enforcement powers allow it to do the following:

i. Initiate investigations.

ii. Commence criminal prosecutions with the consent of the Attorney General.

iii. Initiate civil proceedings to recover monetary damages from offenders.

iv. Impose compounds for certain minor offences.

v. Apply to the court for a restraining order in relation to the activities of a licensed person.

vi. Impose and compound penalties.

vii. Issue public or private reprimands to defaulting issuers and/or directors.

viii. Suspend or revoke licenses of licensed persons.

ix. Apply to the court for an order to remove directors who breach the securities laws.

The Securities Commission is the regulatory agency with the most power, authority and jurisdiction in enforcing all rules, regulations and laws regarding Malaysia's capital market and the financial reporting environment. (*Source: www.sc.com.my*)

Bursa Malaysia

Bursa Malaysia, formerly known as the Kuala Lumpur Stock Exchange, is the main Malaysian Stock Exchange organization. It was established in 1973 to provide a central marketplace for Malaysian listed companies to transact business in shares, bonds and various other securities. This is a self-regulated organization, which governs the conduct of its members and members of stock broking companies when dealing with securities. Bursa has established its own listing requirements, which contain the listing and disclosure standards to be maintained by public listed companies (Ibrahim, Ayoup & Che Ahmad, 2002). Bursa Malaysia, in its effort to ensure that public listed companies maintain its standards and abide by the regulations, established Practice Notes for distressed companies. This was done to monitor companies and maintain the quality of the marketplace. Bursa Malaysia has the function of prescribing listing requirements, guidelines and practice notes; it also has the power to enforce them. Failure to comply with Bursa Malaysia's listing requirements may result in a company being fined, reprimanded or both under section 11 of the Securities Investment Act. Bursa Malaysia has the power to reprimand, fine, issue caution letters, suspend stock broking companies or dealers, and delist issuers from the official list of the exchange. (*Source: www.bursamalaysia.com*)

2.3 Overview of Corporate Fraud in Malaysia

The PwC (2005a) economic crime survey indicates that 23% of Malaysian respondents reported economic crime for the years 2003 and 2004. Out of these reported cases, more than half (57%) involved asset misappropriation. The report also indicates that 70% of reported fraud cases are committed by people inside the companies, of which 21% were committed by the management team. The number of reported cases of economic crime committed by company employees in Malaysia is

higher than any other country in the world (PwC, 2005). The PwC (2005a) survey also highlighted the following issues:

i. Companies in Malaysia are more vulnerable to corruption and bribery and suffer more from these issues compared to companies in other countries.

ii. The perception of Malaysian companies that suffered from corruption and bribery is that these issues had little or no effect on the companies‘ image.

iii. Malaysian companies are willing to invest in extended internal controls and risk management. However, only 25% are willing to strengthen internal auditing, compared to 49% around the world.

A later survey by PwC (2007a) indicates that 48% of Malaysian companies have been the victims of economic crime. This is considerably higher than the figure reported in the 2005 survey, when only 23% of companies reported such crimes. However, the PwC (2007a) survey indicates a decrease in the number of perpetrators among senior and middle management, but an increase in perpetrators from other groups of employees. The PwC (2006, 2007c) survey result for Malaysia showed that fraud is committed more by people inside businesses, including management, which puts the shareholders‘ wealth at stake. Alarmingly, fraud is also one of the contributing factors to the financial distress of companies. Anwar (2006)[5] states that based on the Malaysian Securities Commission investigation, many of the losses suffered by financially distressed companies were largely caused by mismanagement, fraud and other unethical practices. Corporate fraud in Malaysia is on the rise and has become a major problem for business in the country (PricewaterhouseCoopers, 2006, 2007c).

An analysis of the MSCER from the period 2002 to 2007 (see Table 2-1) shows a fluctuating trend in the number of fraud cases according to the four categories of enforcement action. These enforcement powers are divided into four categories of enforcement actions, as follows:

i. Criminal prosecution: investigation and prosecution of offenders in the criminal court.

ii. Civil action: initiation of civil proceedings to recover money from offenders.

[5] Zarinah Anwar is the current chairman of the Malaysian Securities Commission.

iii. Administrative action: application to the court for restraining orders based on offenders' activities; suspension or revocation of offenders' licenses; or removal of directors.

iv. Cases compounded: imposing compounds or penalties on offenders for certain types of offences.

The results of the analysis showed a decreasing trend in the number of cases from 2002 to 2004 and a fluctuating trend for 2005 to 2007.

Table 2-1 Number of Cases for Each Class of Enforcement from 2002 to 2007

Enforcement	2002	2003	2004	2005	2006	2007
Criminal prosecutions	15	13	4	8	6	8
Civil actions	-	-	-	1	1	4
Administrative actions	9	4	2	4	1	2
Cases compounded	7	6	7	6	4	3
Total	31	23	13	19	12	17

The cases were further analysed according to the nature of the offences, as presented in Table 2-2. The offences were divided into two categories: accounting and auditing offences (AA) and others (O). Accounting and auditing offences were those offences that directly impacted on the company's financial reporting, such as false financial statements, abuse of accounting principles and failure to disclose material financial information, as well as the six financial reporting fraud schemes explained by Rezaee (2005). Other offences that do not fall under the accounting and auditing offences criteria were included in the other offences category. Yet again, the results for accounting and auditing offences show a fluctuating trend from 2002 to 2007.

Table 2-2 Nature of Offences from 2002 to 2007

Offences/Year	2002		2003		2004		2005		2006		2007	
	AA	O	AA	O	AA	O	AA	O	AA	O	AA	O
Criminal actions	4	11	3	9	2	2	2	6	3	3	5	3
Civil actions	0	0	0	0	0	0	1	0	0	1	2	2
Administrative actions	1	8	1	4	0	2	1	3	0	1	2	2
Cases compounded	4	3	4	2	3	4	1	5	3	1	1	2
Total	9	22	8	15	5	8	5	14	6	6	10	7

Legend: AA – Accounting and auditing offences, O – Other offences

The perpetrators of fraud for cases under MSCER are shown in Table 2-3. The analysis divides the perpetrators into two groups: management team and others. The management team is defined as middle and senior management, such as the chief executive officer, chief financial officer and the board of directors. Others are those who do not meet the management team criteria, such as general employees and outsiders (not company employees). The analysis shows a fluctuating trend in the number of perpetrators from the management team. Fraud or misconduct committed by the management team has a far greater impact than that committed by other perpetrators.

Table 2-3 Fraud Committed According to Groups of Perpetrators 2002 to 2007

Group	2002	2003	2004	2005	2006	2007
Management team	7	13	7	9	6	8
Others	24	10	6	10	6	9
Total	31	23	13	19	12	17

The results of this analysis highlight a few important facts, such as the highest number of fraud cases occurred in 2002. Even though the number of fraud cases shows a fluctuating trend, there was an increase in the number of cases in 2007 over 2006. In addition, the number of accounting and auditing offences is higher than other offences in 2007. Moreover, the results also indicate the involvement of management in committing fraud.

Both of these results from the economic crime survey by PwC and the enforcement statistics released by the Malaysian Securities Commission indicate cases where the companies were the victims of fraud, and were the perpetrators. Due to the limited number of published fraud cases in Malaysia, this study did not attempt an in-depth investigation into whether companies were the perpetrators or the victims of corporate fraud. Failure to detect fraudulent reports that a company was the victim of corporate fraud indicates either the perpetrators were very good at covering their crimes; there was a failure (weakness) in the company‘s internal control and governance system, or both. Being the perpetrator of fraud also indicates that a company‘s internal control and governance system is weak and the cover up was expertly done, as auditors failed to discover the fraud. The impact of fraudulent reporting whether committed by the company or not is devastating for those who rely on the reported information.

Therefore, the sample selected for this study is made up of companies that were charged with accounting and auditing offences by the Malaysia Securities Commission. Despite the corporate governance revamp in order to strengthen the effectiveness of governance in companies, fraud, bribery and corruption remains a serious issue and increasing issues in Malaysia (as stated in PwC fraud survey 2011, 2014, 2016 and KPMG fraud, bribery and corruption survey 2011)

The Malaysian capital market is moving towards a ‗disclosure-based regime', which will ensure that investors are aware of the risks involved in investing in securities. In order to guarantee full compliance, rules and regulations are imposed. Statutory disclosure has become the starting point for communication between companies and shareholders/investors. Malaysian listed companies' statutory disclosures are based on: the Companies Act 1965; Financial Reporting Act 1997; Capital Markets and Services Act 2007; approved accounting standards; mandatory professional reporting requirements; listing requirements of Bursa Malaysia Securities Berhad; the Securities Commission's issued guidelines; the Banking and Financial Institution Act 1989; and the guideline directives issued by Bank Negara Malaysia (Malaysia Central Bank). All of this is to ensure adequate disclosure and proper reporting by listed companies.

The Companies Act 1965 provides a comprehensive statutory guideline for the conduct of companies in Malaysia, including the duties of directors, which directly impact on corporate governance practices in Malaysia. There are two major aspects to directorial duties: fiduciary duties and the duty to use reasonable care, skill and diligence. Fiduciary duties include the duty to act in good faith, proper exercising of power, appropriate discretion and avoidance of any conflict or self-dealing. Using reasonable care, skill and diligence includes compliance with the securities legislation and listing rules. The Bursa Malaysia listing requirements provide some mandatory minimum guidelines for the corporate governance of listed companies.

The financial reporting of Malaysian listed companies is highly regulated by the Companies Act 1965, Financial Reporting Act 1997, Banking and Financial Institutions Act 1989 (for finance-based companies) and approved accounting standards, as well as mandatory professional reporting requirements. The subjective nature of accounting treatments and reporting has resulted in different measures and formats being used for calculating and presenting financial information. This, to some

extent, has opened the way for manipulation of numbers, which in extreme cases becomes a breeding ground for corporate fraud. The Capital Market and Service Act, Bursa listing requirements, and Securities Commission regulations and guidelines ensure compliance with all rules and regulations by Malaysian listed companies. The key responsibilities of the audit committee with regards to financial reporting are: to assess risks and the control environment, oversee financial reporting, evaluate the audit process, and review conflicts of interest and related party transactions. The overseeing of financial reporting includes reviewing the company‘s earnings and financial reports. As a result of the complicated nature of accounting treatments, audit committees need to be effective and efficient in fulfilling their responsibilities.

2.4 Corporate Governance in Malaysia

The Malaysian capital market‘s products and techniques for raising capital are becoming more sophisticated, so new, modern methods of market surveillance are needed in order to detect economic crime and promote a fair and orderly capital market (Shim, 2006). The Asian financial crisis in 1997 raised much concern over corporate transparency and good corporate governance practices in Malaysian companies. The economic downturn resulting from the financial crisis exposed poor corporate governance practices in Malaysia and led to the establishment of the High Level Finance Committee on Corporate Governance (FCCG) in 1998. The FCCG is responsible for comprehensively reviewing and reforming corporate governance in Malaysia. The committee comprises senior representatives from the government, regulatory agencies, industry bodies and professional associations. In March 1998 the Malaysian Institute of Corporate Governance (MICG) was established under the Companies Act 1965 with the objective to represent, express and give effect to the opinions of members of the MICG regarding issues related to corporate governance, and to promote awareness of corporate governance. The members of the MICG are: the Federation of Public Listed Companies, Malaysian Institute of Directors, Malaysian Institute of Accountants, Malaysian Institute of Chartered Secretaries and Administrators, and Malaysian Institute of Certified Public Accountants. In 1999 a regulation requiring directors and CEOs to disclose interests in publicly listed companies was introduced.

The corporate governance initiatives and reforms in Malaysia do not stop there. The FCCG investigations relating to the 1997 financial crisis came out of the Report of Corporate Governance 1999, which highlighted the vital role of boards of directors as a mechanism of governance that protects shareholders‘ interests. Following this report the Malaysian Code of Corporate Governance (MCCG) was introduced in March 2000, covering the principles and best practice of good governance and describing optimal corporate governance structures and internal processes. An effective and efficient internal control system should be maintained by the boards of directors. An internal control report is also required and should include information on risk management. In January 2001, all companies in Malaysia were required to comply with the corporate governance code of practice in order to strengthen the quality of Malaysian financial reporting and the capital market. The MCCG is similar to the UK Codes of Corporate Governance (Cadbury and Hampel reports). In August 2000, the Minority Shareholder Watchdog Group (MSWG) was established. The MSWG is responsible for protecting the interests of minority shareholders. This group is represented by the five largest institutional funds in Malaysia: the Employee Provident Fund, Permodalan Nasional Berhad, Social Security Organization, Lembaga Tabung Haji and Lembaga Tabung Angkatan Tentera.

In another response to the Report on Corporate Governance 1999, the Capital Market Plan (CMP) was launched by the Securities Commission in February 2001. Included in the CMP recommendations was a 10-year (2001 to 2010) institutional and regulatory framework for the Malaysian capital market, which focused on issues of corporate governance.

In order to strengthen the effectiveness of good corporate governance, the MCCG (2001) stresses the following:

i. Duties, obligations, rights and liabilities of directors, company officers and controlling shareholders.

ii. Adequacy of disclosures of conflicts of interest.

iii. Enhancing the quality of general meetings.

iv. Efficacy in the provision of shareholder remedies.

v. Enforcement of good corporate governance.

In order to strengthen and improve corporate governance in Malaysia, many initiatives were put in place, including the establishment of the Corporate Law Reform Committee in August 2003 and the introduction of a legal provision for whistle-blowers in the Securities Industries Act in January 2004. The Guideline of Best Practices in Corporate Disclosure was introduced by Bursa Malaysia in 2004 to strengthen corporate governance and increase shareholder protection and investor confidence in the Malaysian capital market.

The Code of Corporate Governance was revised in 2007 with the aim to strengthen boards of directors and audit committees, as well as ensure that the boards of directors and audit committees carry out their duties and responsibilities effectively. The key amendments are:

i. The details of the eligibility criteria for appointment of directors and the role of the nominating committee.

ii. The details of the eligibility criteria for appointment as an audit committee member, composition of audit committees, the frequency of meetings and the need for continuous training.

iii. All public listed companies are required to have internal audit functions and the reporting line for internal auditors should be clarified.

Under the requirements of Bursa Malaysia, all listed companies need to report on their corporate governance practices as stated in the Malaysian Code of Corporate Governance and provide reasons in cases of non-compliance.

In 2011, the Malaysian Securities Commission published the Corporate Governance Blueprint, which consists of 35 new recommendations under 8 principles of corporate governance to improve the effectiveness of corporate governance in Malaysia. This recommendation was implemented in 2012 and its effect will be reviewed after five years. The Malaysia Code of Corporate Governance 2012 (MCCG 2012) includes the recommendations from the 2011 Corporate Governance Blueprint as well as some relevant parts from the 2007 Malaysian Code of Corporate Governance. Table 2-4 present the new amendments to the Code.

Table 2-4 MCCG 2012 New Amendments

Principle	Recommendations
Board to establish clear roles and responsibilities	- Establish clear functions for the board and management. - Establish clear roles and responsibilities with respect to fiduciary and leadership functions. - Establish ethical standards and ensure compliance. - Ensure company's strategies encourage sustainability. - Have procedure in place allowing members to obtain access to information and advice. - Have qualified and competent company secretary. - The board charter needs to be formalised, made public and reviewed periodically.
Strengthen composition	- Establish nominating committee, which should be comprised exclusively of nonexecutive directors, a majority of whom must be independent. - Nominating committee should develop, maintain and review the criteria to be used in the recruitment process and annual assessment of directors. - Establish formal and transparent remuneration policies and procedures to attract and retain directors.
Reinforce independence	- Undertake an assessment of its independent directors annually. - The tenure of an independent director should not exceed a cumulative term of nine years. - Upon completion of the nine years, an independent director may continue to serve on the board subject to the director's re-designation as a non-independent director. - The board must justify and seek shareholders' approval in the event it retains as an independent director a person who has served in that capacity for more than nine years. - The positions of chairman and CEO should be held by different individuals, and the chairman must be a non-executive member of the board.

	- The board must comprise a majority of independent directors where the chairman of the board is not an independent director.
Foster commitment	- The board should set out expectations on time commitment for its members and protocols for accepting new directorships. - The board should ensure its members have access to appropriate continuing education programmes.
Uphold integrity in financial reporting	- The audit committee should ensure financial statements comply with applicable financial reporting standards. - The audit committee should have policies and procedures in place to assess the suitability and independence of external auditors.
Recognise and manage risk	- The board should establish a sound framework to manage risks. - The board should establish an internal audit function that reports directly to the audit committee.
Ensure timely and high-quality disclosures	- The board should ensure the company has appropriate corporate disclosure policies and procedures in place. - The board should encourage the company to utilize information technology for effective dissemination of information.
Strengthen relationship between company and shareholders	- The board should take reasonable steps to encourage shareholder participation at general meetings. - The board should encourage poll voting. - The board should promote effective communication and proactive engagements with shareholders.

Source: MCCG 2012

2.5 Summary

This chapter provided a basic overview of Malaysian financial reporting; the capital market's environment, structure, regulation and enforcement; and corporate governance in Malaysia. The Malaysian capital market is moving towards a disclosure-based regime' so that investors will be fully informed of the risks involved in investing in securities. In order to ensure full compliance, certain rules and regulations have been imposed. All in all, in terms of rules and regulations Malaysia was ranked second out of 10 countries by the Asian Corporate Governance Association Conference 2005 (Allen, 2005). However, in terms of enforcement, the country was ranked fourth. Perhaps due to the highly regulated environment, the level of compliance, especially meeting the minimum requirements, is very high for Malaysian listed companies. However, even though it is number two in the compliance ranking, Malaysia is not free from non-compliance and violations of corporate practice (including corporate fraud). The country is also quite weak in enforcement. Therefore, the regulatory bodies need to improve enforcement to curb these issues, in particular corporate fraud. The following chapter will elaborate on past studies/literature that relate to this study.

Chapter 3
Literature Review

3.1 Introduction

This chapter is divided into three parts: The first part focuses on the main theme of corporate fraud. The second part provides a discussion of corporate governance and the final part covers earnings management literature.

3.2 Corporate Fraud

No discussion of corporate fraud can proceed without first establishing the definition, nature and types of fraud. This section explores the issues of business risk and agency cost, explaining why fraud exists. This is followed by the definitions of fraud in general and corporate fraud specifically. The section then moves on to consider the nature and types of corporate fraud. A brief overview of corporate fraud in Malaysia is also included.

3.2.1 Business risk and agency problem

The ultimate goal of an investment is a high return, but this is associated with high business risk. As stated by Bettis and Mahajan (1985, p. 785) ‗the conventional wisdom of economic theory is that it is necessary to assume increased risk in order to increase the expected profit'. It is vital for every investor and shareholder to understand the type of risk involved in a business. Business risk varies according to the environment, and this includes factors such as business activities, markets, financial structures and the legal environment. All risk can be categorized into three groups (Huntington, 1992):

i. Inherent industry risk: This is the risk of fraud that is present in every aspect of the industry or business. There are two types of fraud associated with inherent industry risk: management fraud and employee fraud. Management fraud can occur in any business sector or industry. The risk of management fraud depends on a few key characteristics: the financial structure, secrecy policy, and transaction volume, access to credit, new and complex products, and market conditions. Employee fraud can also occur in any type of business.

> Companies that are most at risk are those that give authority to their employees (that are not senior management) to deal with large business transactions in an ever-changing market.

ii. Environmental risk: This type relates to the organization or business structure, the social and cultural environment, performance evaluation, financial conditions, and managerial structure and quality.

iii. Business risk: This risk is associated with the market and customers.

As there is risk in every aspect of a business, shareholders and investors should be careful when deciding where they invest. Inherent risks are quite difficult to tackle. Inherent risk is more likely when there is a separation of management and ownership, which denies the owner full control over the management of their assets. This principal (owner) and agent (managers) relationship is widely known as agency relationship. Jensen and Meckling (1976) define agency relationship as:

> An agency relationship as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. (p. 5)

The agent is the management team in charge of the firm‘s managerial activities. It is assumed that if left alone the management will act out of self-interest (Jensen & Meckling, 1976; Watts & Zimmerman, 1986). With decision-making authority and vital internal information, including confidential information, managers have the opportunity to do what is best for them. Therefore, there will be a conflict of interest between the management team and the shareholders. In order to reduce this problem the principal creates incentives for the managers and incurs the cost of monitoring their activities and decisions (Jensen & Meckling, 1976). This agency cost is defined by Jensen and Meckling (1976) as:

i. The monitoring costs incurred by the principal.

ii. The bonding costs incurred for the agents.

iii. The residual loss.

Past researches have shown that shareholders have incurred agency cost in order to reduce the problem of agency and protect their wealth. Jensen and Meckling (1976), Rozeff (1982) and Crutchley, Jensen Jahera and Raymond (1999) indicate that dividend payments reduce the agency problem as they reduce the discretionary funds available to managers. Rozeff (1982) states that in firms where insiders hold a lower fraction of the management positions and a greater number of stockholders own the outside equity, the dividend payouts will be higher. In order to control agency cost arising from inefficiencies, managers make financial policy trade-offs (Crutchley et al., 1999). Dividend policy could also mitigate agency cost of free cash flow (Sulong and Mat Nor, 2016). Sulong and Mat Nor (2016) analysed the dividend policy, ownership structure and board governance on firm value in Malaysian companies found that dividend has positive significant effect on firms value. Good governance enhance (higher percentage of independent directors and size of board) monitoring role of dividends in reducing agency cost. The study found that duality role has significant relationship with company‘s dividend policy while ownership concentration and managerial ownership is not significant.

The stewardship theory was proposed as an alternative to the agency theory; it arose from the psychology and sociology fields, unlike agency theory, which is based on an economic model (Albrecht, Conan & Chad, 2004). Sundaramurthy and Lewis (2003) state that stewardship theory uphold the stewards concept, by which managers are believed to put shareholders‘ interests over their own, despite personal motivations or incentives. Self-interest is not the main motivator under the stewardship theory, but rather gaining satisfaction through success and challenges motivates the stewards (Albrecht et al., 2004). Donaldson and Davis (1991) state that gaining recognition from peers and board members is also a motivation for stewards to carry out their responsibilities properly. The stewardship theory emphasises enabling managers, rather than controlling them. Stewardship is all about trust (Albrecht et al., 2004), and therefore Donaldson and Davis (1991) propose that CEO duality can enhance company performance, and CEOs work best when they are also chairman of the board. However, past literature has shown mixed results relating to CEO duality and fraud, resulting in the agency theory prevailing over the stewardship theory. All companies have a corporate structure based either on agency theory, with control mechanisms to curb the opportunistic behaviour of management, or on stewardship

theory, with more trust being given to management. In a normal business setting with inherent risk involved, the stewardship structure provides more opportunity for fraud as compared to the agency structure with control mechanisms in place (Albrecht et al., 2004).

Stakeholder theory perceived managers to make decision by taking into account the interest of all the stakeholders in the company which include the financial claimants, employees, customers, communities and government (Jensen, 2001). Jensen (2001) states that it is not possible for managers make decisions when the theory did not specify on how to fulfil the interest of all those stakeholders. It is difficult to actually meet all the interest of the different stakeholders. Effective corporate governance should address all the theories on social relationships as well as the rules, legislation, cultural, political and historical environment. However, agency theory remains the basis of governance framework. As for Malaysia, all the three theories mentioned is embedded in the development of Malaysia corporate governance.

This section continues with a discussion on the term „fraud" and its types, as well as the issue of fraud control.

3.2.2 Definition of fraud

It is essential to have a sufficient understanding of what corporate fraud is before its related issues can be discussed any further. This section will provide definitions of fraud from two perspectives: the lingual perspective and the legal perspective.

Lingual perspective

The Longman Dictionary (2005, p. 640) defines fraud as: „(1) The crime of deceiving people in order to gain something such as money or goods; and (2) Someone or something that is not what it claimed to be". In common understanding, fraud means deception or intentional misrepresentation of material fact (Bologna, 1984). From an auditing point of view, fraud can be defined as an „intentional wrongful act with the purpose of deceiving or causing harm to another party" (Arens et al., 2007, p. 96). Another definition by Comer (2003, p. 4) states that fraud is „any dishonesty to which one person intends to get an advantage over another". From a commerce and economics perspective, O'Gara (2004, p. 1) indicates that fraud includes

_irregularities and illegal acts with intentional deception', which are committed for a company's benefit or detriment by a person on the inside or outside.

PricewaterhouseCoopers (PwC) refers to fraud as an economic crime in their fraud survey and uses the terms _crime' and _fraud' interchangeably. PwC (2005b, p. 28) defines economic crime or fraud as _wrongful or criminal activities to or in an organization, intended to result in the gain of money or benefits for the perpetrator(s)'. Another definition of corporate crime by Clinard and Quinney (1973, p. 188) is _the offences committed by corporate officials for their corporation and the offences of the corporation itself'. Bologna (1984) describes corporate fraud as acts of deception or cheating with intent, committed by, for or against a business corporation. The Malaysian Approved Standards on Auditing (Malaysian Institute of Accountants, 2001, p. 193) AI No. 240 defines fraud as _an intentional act by one or more individuals among management, those charged with governance, employees, or third parties, involving the use of deception to obtain an unjust or illegal advantage'.

From these definitions, the general understanding of fraud can be seen as: misrepresentation of facts to make others believe what is not true, with the fraudster having the intention to gain an advantage (financial or non-financial) in the dealing.

Legal perspective

The Black Law Dictionary (Garner & Black, 2009) defines fraud as:

i. A knowing misrepresentation of the truth or concealment of a material fact to induce another to act to his or her detriment is usually a tort, but in some cases, especially when the conduct is wilful, it may be a crime.

ii. A misrepresentation made recklessly without belief in its truth to induce another person to act.

iii. A tort arising from knowing misrepresentation, concealment of material fact or reckless misrepresentation made to induce another to act to his or her detriment.

English common law defines fraud as cheating or deceit, which is considered a crime (Bologna, 1984). Bologna (1984, p. 6) summarizes the legal view on fraud as: _(1) A tort (civil or private wrong) where assets or monetary recovery are sought for damages; (2) A contract law or Uniform Commercial Code violation where it sought

to end an agreement and return of money or property; and (3) A criminal offense (public wrong) where fine and/or imprisonment can be imposed‘.

In the Malaysian legal system, there is no single legal definition of fraud. The act of fraud falls under a particular branch of the law based on its nature. First is statutory fraud; various statutes address fraudulent acts as an offence and the express definition may be provided by the specific statute. In the absence of any definition, then case law provides the definition. Malaysian statutes concerned with fraud include: the Companies Act 1965 (Malaysia Companies Act 1965 (Act 125), 2007), which does not define fraud under s4 interpretation, but does cover instances of fraud in the various sections, e.g. the newly amended section 174 refers to powers and duties of an auditor to report acts of fraud; and section 17 of the Contracts Act 1950 (Malaysia Contracts Act 1950 (Act 136) 2006) gives extensive instances of fraudulent acts.

Second is criminal fraud, where the fraud is a crime under the Malaysian Penal Code (Malaysian Penal Code (Act 574) 2006). Whilst fraud per se is not defined, under s25 the act defines _fraudulently‘ as _a person is said to do a thing fraudulently if he does that thing with intent to defraud, but not otherwise.‘ This goes back to the meaning of _defraud‘, which is based on a layman‘s definition or any established definition of fraud in case law. The third is fraud as tort, where _torts‘ refers to the branch of law that deals with civil wrongs. In torts, fraud is legally classified as _intentional torts‘, which is a civil wrong resulting from an intentional act on the part of the tortfeasor (the person who committed a tort). It may be dealt with specifically under an established branch of torts; for instance, when a fraudulent act is committed by an agent of a principal, it may be dealt with under the tort branch _vicarious liability‘, as well as under contract law.

Though the wording of the definitions differs, it can be concluded that fraud is an intentional act to deceit or cheat with the desire to obtain an advantage or cause harm to another party. In the legal perspective, fraud can be a civil wrong, a tort or a crime. Thus, the act of fraud committed by corporations or companies, or a person or persons in the companies, can be defined as an intentional wrongful act by a corporation or company with the purpose of deceiving or causing harm to another party.

3.2.3 Nature and types of fraud

The nature of corporate fraud varies widely, encompassing accounting fraud, asset misappropriation, corruption and bribery, money laundering, and intellectual property infringement. Accounting fraud, or financial statement fraud, is at the top in terms of the damage and losses it causes to the economy and society as a whole; therefore, the main focus of this study is corporate accounting fraud.

Financial statements should be free from material misstatement. Material misstatement can result from any intentional error that is made by the company. When an error is made on purpose, it signifies the intention to commit fraud (Huntington, 1992). From the accounting point of view, Arens et al. (2007, p. 76) define fraud in general as ‗an intentional wrongful act with the purpose of deceiving or causing harm to another party'. The Malaysian Approved Standards on Auditing (Malaysian Institute of Accountants, 2001, p. 193) AI No. 240 states that fraud is ‗an intentional act by one or more individuals among management, those charged with governance, employees, or third parties, involving the use of deception to obtain an unjust or illegal advantage'. This definition is consistent with the US Auditing Standards SAS No. 54, AICPA 1988 (SAS No. 82), AICPA 1997, which defines fraudulent financial reporting as fraudulent acts that cause material misstatement. Going further, PwC (2005b) defines fraud individually according to the type of fraud committed. The three important types of fraud and their PwC (2005b, p. 28) definitions are as follows:

i. Economic crime or fraud is defined as ‗wrongful or criminal activities to or in an organisation, intended to result in the gain of money or benefits for the perpetrator(s)'.

ii. Asset misappropriation (including embezzlement by employees) is defined as ‗the theft of company assets (including monetary assets/cash or supplies and equipment) by company directors, others in fiduciary positions or an employee for their own benefit'.

iii. Financial misrepresentation is defined as ‗company accounts are altered or presented in such a way that they do not reflect the true value of financial activities of the company'.

Fraudulent financial reporting can be classified into two major groups: misstatements arising from fraudulent financial reporting and misstatements arising from misappropriation of assets. Going further, KPMG (2006) breaks financial fraud down into the following categories:

i. Fraudulent financial statement reporting: most fraudulent financial reporting schemes involve earnings management, arising from improper revenue recognition and overstatement of assets or understatement of liabilities.

ii. Misappropriation of assets: this category involves external and internal schemes such as embezzlement, payroll fraud, external theft, procurement fraud, royalty fraud and counterfeiting.

iii. Expenditures and liabilities (avoided or incurred) for improper purposes: this refers to commercial and public bribery, tax fraud, wages abuse, falsifying compliance data provided by regulators, and other improper payment schemes.

iv. Fraudulently obtained revenue and assets: such as over-billing customers, deceptive sales practices, and accelerated or bogus revenue.

v. Other misconduct: such as conflicts of interest, insider trading, discrimination, theft of competitor trade secrets, antitrust practices and environmental violations.

There are many ways to commit financial fraud, but revenue recognition and misstatement are the most common (Beasley, Carcello & Hermanson, 1999). Kessler‘s (2001) survey indicates that fraud haunts companies and forensic accountants. Squires (2003) states that economic crime and fraud do not leave clear footprints, and therefore forensic accountants have to look beyond the figures to see the reality. Brief, Dukerich, Brown and Brett (1996) conducted a study on chief financial officers and the pressure to shift expenses between periods for income smoothing; they found that 87% of the respondents were willing to do so.

There are three elements common to all fraudulent acts: perceived pressure, perceived opportunity and rationalization (Albrecht, Albrecht, Albrecht & Zimbelman, 2009). Perceived pressure is when one thinks there is a need to commit fraud. Perceived opportunity is the perception that there are chances or conditions to commit fraud without being detected. Rationalization is when one believes that the act of fraud is

justified and in line with their ethical beliefs. Some examples of perceived pressures that cause people to commit fraud are: financial needs, work frustration and a desire to beat the system. When there is an opportunity to commit fraud, combined with a control system that is weak or absent and the perception that the crime is ethically acceptable, fraud can easily be committed.

The PwC (2007) survey indicates two types of fraud triggers: individual and corporate causes. Individual causes are the perpetrators‘ personal reasons, e.g. incentives and the ability to rationalise the crime. Corporate causes are organizational reasons that allow fraud to occur, e.g. the levels of control and the ethical culture of the organization. The results from the PwC survey list the following reasons for fraud:

Individual causes:

i. Financial incentives (greed)
ii. Low temptation threshold
iii. Lack of awareness of wrongdoing
iv. Expensive lifestyle
v. Denial of financial consequences
vi. Career disappointment
vii. Potential redundancy

Corporate causes:

i. Low commitment to brand
ii. Insufficient control
iii. Ability to use authority to override control
iv. Staff anonymity is too high
v. High company target
vi. Unclear corporate ethics

The consequences of corporate fraud are very damaging, going beyond monetary loss. PwC (2003, 2007b) indicates that the collateral costs of fraud includes business relationships, staff morale, share prices, brand image and reputation. These collateral costs are more damaging when the fraud is committed by the management.

Management fraud

According to Zahra, Priem and Rasheed (2007), fraud constitutes deliberate actions by management at any level to deceive, con, swindle or cheat investors or stakeholders. While Bologna (1984) states that:

> Managerial fraud is the intentional overstatement of corporate or unit profits, inspired, perpetrated or induced by employees serving in management roles who seek to benefit from such frauds in terms of coveted promotions, job stability, larger bonuses or other economic incentives and status symbols. (p. 20)

Some decisions made by managers do not take into consideration the future sustainability of the company; instead, decisions are based on perceived personal benefits. For example, during the increase of economy (good time), some managers decided to commit their companies to large debts to finance various projects. Undergoing many projects reflects the company‘s growth and increase in performance, which results in the company showing good performance and high return. Expecting the economy to remain healthy, the company increases borrowing as the forecasted future return is high. But when the economy starts to decline, the demand for projects or products will decline as well. Thus, the company will have difficulty paying back its debts due to the decrease in income or sales.

Barnes (2004) states that senior managers and directors will do anything to make the company look like its performing well to avoid mergers or takeovers, as their livelihoods are at stake. The same conclusions were made by Jensen (1986), Franks and Mayer (1996). Williamson (1984) argues that managers‘ motivations principally include salary, security, prestige and power, which may be seen through expense accounts, luxurious offices, company cars, number of assistants, professional excellence and others. Studies conducted by McKenna (1990) and Brief et al. (1996) draw the same conclusion: managers are willing to smooth out income or misrepresent accounting information when under pressure. There are indeed many motivations for managers to fall off track and commit fraud. Hence, managers‘ acts need to be controlled and monitored. Two sets of control mechanisms are employed by companies: external control mechanisms (compulsory audits by an external auditor) and internal control mechanisms (corporate governance).

As Saksena (2003, p. 21) explains, „despite an increase in responsibility, access to inside information and applying audit procedures, audit firms have not been successful in detecting and reporting management fraud". The author gives four reasons for the failure to detect and report management fraud:

i. Auditing standards: these increase the role of auditors in detecting and reporting management fraud; however, the standards state that if the audit has been performed according to generally accepted auditing standards, then the auditor has done their job (SAS 53, AICPA, 1988).

ii. Deliberate action: management fraud is a deliberate action by the management to misrepresent or misstate financial information. As auditing involves testing a sample, the management may participate in well-concealed fraud that the auditor cannot detect (AICPA, 1988; Arens & Loebbecke, 1988; Bintliff, 1993; Campbell & Parker, 1992; Hanson, 1977; Kapnick, 1977).

iii. Litigation: the increase in litigation against auditors, large settlements by auditors and negative press against auditors as a result of management fraud (Palmrose, 1991, 1987) are evidence of auditing firms' inability to detect management fraud (Park, 1989; Welch, Reed & Strawser, 1995).

iv. Training: auditors are neither trained nor are necessarily able to detect violations of the laws that govern corporate conduct (Cressey, 1987).

External audits are one of the external control mechanisms that are compulsory for all public companies. The auditors' responsibility in detecting fraud increases in spite of their inability to do so. The users expect the auditors to be able to detect fraud; therefore, there is a gap between the expectations of users of financial statements and the auditing profession. One way to narrow this gap would be for auditors to improve their ability to detect and report management fraud (Saksena, 2003). In order to prevent acts of fraud, the regulatory and professional bodies have introduced many control mechanisms.

Control mechanisms and fraud

The separation of ownership and management creates the agency problem. The expectation that managers will carry out their stewardship duties for the shareholders remains just that: an expectation. Therefore, to reduce the agency problem, shareholders and other stakeholders have to incur agency costs to control and monitor management activities and decisions. The collapses of big corporations such as Enron, Worldcom, Xerox, Parmalat and many others were linked to weaknesses in the companies' control systems, both internal and external. Enron's case provided clear proof that weaknesses can be present in companies' control systems and top management can easily override controls (Free, Macintosh & Stein, 2007). Sargent (2002, September 13) states that the four basic control mechanisms developed over the last century aimed at protecting investors and curbing managerial fraud are failing. These mechanisms are: corporate transparency, corporate monitoring, stock option compensation and SEC enforcement. These failures lead to increases in fraud. Cohen, Gaynor, Krishnamoorthy and Wright (2007) state that weaknesses in internal controls indicate that companies' control systems are weak, which may lead to the management managing or manipulating earnings. They also note that a board that monitors effectively is more likely to emphasise the quality of the company's internal controls. This is consistent with the findings of Cohen, Krishnamoorthy and Wright (2007), who showed that the auditor's control risk assessment is lower when the board is effectively monitoring the company's financial reporting process.

Companies' internal control systems are important in managing business risk (Vinten, 2001). Weaknesses in internal controls and the ability of management to override controls have been cited as providing opportunities for fraud (Riahi-Belkaoui & Picur, 2000). The KPMG 2000 Fraud Survey (2001) highlights poor management and controls as contributing factors to fraud in Malaysia. The PwC Economic Crime Survey (2005b) also shows that weaknesses in control mechanisms contribute to fraud. An empirical analysis of corporate crime determinants in Malaysia by Voon, Voon and Puah (2008) found that internal controls are at the highest ranking of corporate crime determinants. Ernst and Young (2006) report that 70% of their senior manager respondents believed that fraud is more likely to occur in emerging markets as compared to developed markets, as internal controls are weak. Skousen and Twedt (2009) found that the risk of fraud varies among countries and industries. Corporate

governance is part of the control mechanism developed to monitor and control management and company activities.

3.3 Corporate Governance

The literature on corporate governance is ample, so it is not the aim of this chapter to cover it all. Instead, the focus will be on the literature on corporate governance and its relationship with fraud and weak internal controls. The next section will highlight the importance of the key corporate governance characteristics selected for this study. Also, the research gap will be discussed at the end of the section.

The role of corporate governance is to monitor and control the management and business activities, which includes controlling and monitoring the financial affairs of companies. Beasley (1996) indicates that weak corporate governance structures result in weak internal controls, which contributes to mismanagement, fraud and unethical decision making by managers. Studies on the effectiveness of independent board members in reducing earnings management have shown mixed results. A higher number of independent board members help in reducing the incentive for earnings management, which means better control (Baysinger & Hoskisson, 1990; Borokhovich et al., 1996, 2002; Mulgrew & Forker, 2006). However, Bradbury, Mak and Tan (2006), Mak and Kusnadi (2005), and Hashim and Susela (2006) found a positive relationship between the number of independent board members and earnings management practices.

Weak corporate governance in South East Asian companies was a significant contributing factor to the economic crisis of 1997 (Kim, 1998). Good corporate governance should direct the board and management to act in the company‘s and shareholders‘ interests and enhance effective monitoring. Unfortunately, there is no single model of good corporate governance (Chen, Kao, Tsao & Wu, 2007). However, there are a few basics of good corporate governance, as stated by Chen et al. (2007):

> …the basic principles of good corporate governance are to promote transparent and efficient markets, to protect and facilitate the exercise of shareholders‘ rights, to ensure the equitable treatment of all shareholders, and to ensure that timely and accurate disclosure is made on all material matters. (p. 251)

Corporate governance frameworks depend on the legal, regulatory and institutional environments that companies are in. A good corporate governance mechanism would minimize agency cost and reduce the company's market value loss resulting from potential conflict between the managers and the owners (Shleifer & Vishny, 1997). The Organization of Economic Co-operation and Development (2004) gives the corporate governance principles as:

i. Corporate governance is one of the important factors for improving the efficiency and growth of the economy and increasing investor confidence.

ii. It involves the relationship between a company's management, its board, its shareholders and other stakeholders.

iii. It provides the structure through which the objectives of the company are set and the means to achieve it and determine how performances are monitored.

iv. It should provide proper incentives for the board and management to pursue the companies' objectives and shareholders' facilitation of effective monitoring.

v. An effective corporate governance structure should give confidence that the market is functioning well.

vi. Cost of capital will be lower and resources of the firms will be used efficiently, hence stimulating growth.

This explanation clearly shows the importance of corporate governance in companies. The benefits that companies receive will ensure business growth and a more stable and secure market/economy.

Corporate governance is a system that governs the best practices of individuals in a company, especially the management team, so that they carry out their duties in the best interests of all shareholders and stakeholders. In Oman's (2001) words:

> Corporate governance refers to the private and public institutions, including laws, regulations and accepted business practices, which together govern the relationship, in a market economy, between corporate managers and entrepreneurs (_corporate insiders') on one hand, and those who invest resources in corporations, on the other. Investors can include suppliers of

> equity finance (shareholders), suppliers of debt finance (creditors), suppliers of relatively firm-specific human capital (employees) and suppliers of other tangible and intangible assets that corporations may use to operate and grow. (p. 13)

The High Level Finance Committee on Corporate Governance (1999, p. 52) defines corporate governance as ‗the process and structure used to direct and manage the business and affairs of the companies towards enhancing business prosperity and accountability with the ultimate objective of realizing long term shareholders value, whilst taking into account the interests of other stakeholders'. Showing more brevity, Monks and Minow (2001) state that corporate governance is the ‗relationship among various participants in determining the direction and performance of corporations'. Therefore, corporate governance is a mechanism of control and guidance used to improve the management of companies for the benefit of all stakeholders.

3.3.1 Past research on corporate governance

The need for an effective corporate governance system in companies is undeniable. Much research has empirically shown the significant relationship between corporate governance and fraud. Beasley et al. (1999, 2000) and Beasley (1996) conducted studies of financial statement fraud within three industries (technology, health care and financial services). The studies found that corporate governance factors differ between fraudulent companies and non-fraudulent companies, with the corporate governance of the fraudulent companies being very weak. Cullinan and Suttom (2002) found that 70% of the fraud in companies involves CEOs and 20% involves senior managers. The study also included a claim by an external auditor that fraud is not easy to detect as it is often effectively covered up by senior management and the audit methods used are not designed to detect fraud.

Bell and Carcello (2000) found that the significant risk factors of fraud are: a weak internal control environment; rapid company growth; inconsistent or inadequate probability; an undue management focus on meeting earnings projections; an overly evasive or lying management; private ownership status; and an interaction factor between weak controls and aggressive management attitude towards financial accounting. Beasley's (1996) study on fraud risk factors found that non-fraudulent firms have significantly higher percentages of outside members than fraudulent firms.

Outside members on the board could reduce the tendency of fraud activities to happen, as control and monitoring are more effective. Grove and Basilico (2008) studied fraudulent financial reporting detection and concluded that an all-powerful CEO, weak system of management control, senior management turnover, insider stock trading and questionable business strategies with opaque disclosure are significant red flags for fraudulent companies. Grove and Cook (2004) come to the same conclusion in their analysis of the financial statements of Enron, WorldCom, Qwest and Global Crossing. Some of the red flags are corporate culture, a lack of internal controls and problems with companies‘ auditors in terms of high consultation fees as compared to audit fees. Beasley et al. (2000) also find that a weak governance system is associated with fraud occurrences. The following sections discuss the corporate governance literature on board of director characteristics, board chairman characteristics, audit committee characteristics and activity, as well as the block holders‘ roles as part of the companies‘ governance.

3.3.1.1 Boards of directors' characteristics and activity

The board of directors has been identified as one of the important ways to control managers‘ actions (Fama, 1980; Fama & Jensen, 1983). Many past studies have shown that the board is an essential component of the corporate governance structure (Mace, 1986; Monks & Minow, 2001). A board of directors‘ characteristics are divided into two parts: board characteristics in general and characteristics of the board chairman. This study analyses four board characteristics, which are: independence of board members, number of board members, number of board meeting per year and director‘s shareholdings.

Studies on the effectiveness of ***independent board members*** in reducing earnings management have shown mixed results. A higher number of independent board members help in reducing the incentives for earnings management, which results in better control (Baysinger & Hoskisson, 1990; Borokhovich, Parrino & Trapani, 1996; 2002; Mulgrew & Forker, 2006). Jensen (1993) and Lipton and Lorsch (1992) found that a board with a higher percentage of independent directors will provide better decision control and monitoring of management activities. Beasley (1996) examined the relationship between board of director composition and financial statement fraud; in particular, he examined outside directors, independent directors and audit committees. Outside directors are defined in the study as directors who are not

employees of the company, while independent directors are ‗a director who has no affiliation with the firm other than the affiliation from being on the board of directors' (Beasley, 1996, p. 448). The study found that the difference between outside directors and independent directors did not affect the analysis and non-fraudulent companies have a significantly higher percentage of outside directors.

Xie et al. (2003) found a significant negative relationship between the percentage of outside directors and earnings management activities, which means that the higher the percentage of outside directors the better the control over management's ability to manage earnings. Similarly, Petra (2005) found that outside and independent directors do strengthen corporate governance. Beasley (1996) and Saksena (2003) found that more independent directors on the board significantly reduces the likelihood of financial statement fraud. A higher percentage of independent directors will provide better control and monitoring of management activities and reduce the likelihood of corporate fraud. Carcello and Nagy (2004) found that non-fraudulent companies have a higher proportion of outside directors than fraudulent companies, and this is consistent with the findings of Beasley (1996). In examining the relationship between the credibility of financial reporting systems and the quality of corporate governance, Farber (2005) found that the fraudulent companies in the study showed weak governance as compared to control firms. In particular, fraudulent companies had a smaller number of outside board members and audit committee meetings, a small percentage of ‗Big 4' auditing firms, and a higher percentage of CEO duality. A study by Mohd Salleh and Othman (2016) on boards attributes as deterrence to corporate fraud in Malaysia found that the frequencies of board meeting can be used to monitor the company. The study indicates that more frequent the board meet the better control over the company activities. The study also found that size of board and duality is not significant in fraud deterrence.

Abdullah, Yusof and Mohamd-Nor (2010) study on financial restatement and corporate governance in Malaysia indicate that board independent, audit committee independent, managerial ownership and and CEO duality did not have significant effect on the likelihood of financial misstatement. However, the study found that institutional ownership or shareholding do have significant effect on the likelihood of financial misstatement. The study found that the higher percentage of institutional ownership reduces the event of financial misstatement. Malaysian company is highly

concentrated as a majority of the company in Malaysia is family-owned company and having outsiders holding some ownership could increase control and monitoring of company‘s activities.

In a study on the impact of board composition and ethnicity on audit quality in Malasyaia by Salleh, Steward and Manson (2016) found that board independent promote the appointment of higher quality of auditors which indicates better assurance of audit quality. The study conclude that higher percentage of independent directors on the board promote the appointment of quality auditors which resulted in higher audit fees. Having a higher quality of auditors, instil confident in shareholders regarding the quality of company‘s financial report. The study also found that ethnicity and duality of directors has no significant impact on audit quality. Another study by Wan Abdullah, Wan Ismail and Jamaluddin (2016) found a consistent result with Salleh et al. (2016) that independent of board directors promote higher audit quality. Wan Abdullah et al. (2016) also found that Institutional ownership promote the appointment of quality auditors. The study indicates that higher percentage of institutional ownership promote higher quality of audit. Consistent with Salled et al. (2016), the study found that duality is not significant in promoting higher audit quality.

On the other hand, Li and Ang (2000) found that a greater number of outside directors does not affect the effectiveness of directors‘ performance in monitoring and controlling management activities. The findings here are similar to those of Bradbury, Mak and Tan (2006), and Mak and Kusnadi (2005). A study carried out in Malaysia and Singapore by Hashim and Susela (2006) found a positive relationship between the number of independent board members and earnings management practices; this raises a question as to whether the independence of board members is effective in monitoring management activities. A study conducted in China by Chen, Firth, Gao and Rui (2006) on the relationship between company ownership structure, corporate governance and fraud found that the proportion of outside directors is negatively related to fraud, which means that companies that have a higher proportion of outside directors are less likely to commit fraud. On the contrary, Hasnan et al. (2008) conclude that outside directorship or independent directors do not have a significant relationship with fraudulent financial reporting in Malaysia. This calls for the role of independent directors into question. Did the independent directors fail to carry out

their duties? And were they really independent, free from any relationship with the company? Could this governance characteristic be a weak characteristic in fraud deterrence in the Malaysian setting given the differences in law, culture, business and ownership structure? To answer these questions it is important to study this characteristic in the Malaysian context and gain understanding of the role of independent directors in fraud deterrence.

For a board to effectively control and monitor managers, the ***number of board directors*** should be seven or eight (Jensen, 1993; Lipton & Lorsch, 1992). The smaller the number of directors on the board (fewer than 10) the more effective the board is at carrying out their function (Yermack, 1996). Chen et al. (2006) studied corporate fraud in China and found that board size is not significant in deterring fraud; this is consistent with Uzun, Szewczyk and Varma (2004), Carcello and Nagy (2004), Faber (2005), Bradbury et al. (2006), and Samili and Labelle (2009). However, Beasley (1996) found that a larger board increases the likelihood of financial statement fraud as it reduces the effectiveness of the controls. Xie et al. (2003), on the other hand, found that having a larger board is associated with less earnings management activities. Clearly the results for this characteristic are mixed. The Malaysian Code of Corporate Governance best practices do say that the number should be suitable according to the company‘s needs: not too small, not too big. According to the MCCG 2011 Blueprint between seven and nine members is effective, but this depends on the company‘s operation and size; the number can be more or less. Since there is no established perfect number for this characteristic, it is important to study it. This is especially true for Malaysia given the differences in how the country conducts business.

The importance of ***frequent board meetings*** is highlighted in the Malaysia Code of Corporate Governance best practices. The Code suggests the board should meet regularly, at least four times per year. The more frequently the board meets the more effective it will be at monitoring and controlling management activities (Abbott, Parker & Peters, 2004; He, Labelle, Piot & Thornton, 2009; Lipton & Lorsch, 1992). Having frequent meetings means that the directors will review the company‘s activities more often and will be kept updated on the company‘s performance. A study by Chen et al. (2006) in China found that more frequent board meetings reduced the likelihood of fraud occurring. This indicates that effective monitoring and controlling

of management activities will reduce the likelihood of fraud activities. In contrast, Jensen (1993), Uzun et al. (2004), and Bedard, Chtourou and Courteau (2004) found that the frequency of board meetings does not necessarily lead to effective monitoring of management. These mixed results trigger the question: what about Malaysian companies? Does holding more meetings contribute to better monitoring and control or not? This study analyses this characteristic to shed more light on it and answer the aforementioned questions.

Directors' shareholdings refer to the percentage of shares owned by the board members in the company. When managers have a large interest in a company, most likely they will try to increase the value of the company, which results in a decrease in agency cost (Jensen & Meckling, 1976). The managers will not put the company at risk of fraud, and therefore will reduce the likelihood of such criminal practices. On the other hand, Loebbecke, Eining and Willingham (1989) note that having a significant ownership in a company is a motivational factor for fraud. Summers and Sweeney (1998) investigated the relationship between insider trading and fraud and found that managers, i.e. insiders, will reduce their shareholding in the event of fraud.

Kim, Al-Shammari, Kim and Lee (2009) carried out a study on the relationship between CEO duality and corporate diversification in the US. They found that a high concentration of board or directors' shareholding reduces the positive relationship of duality and corporate diversification. This indicates that with a higher percentage of directors' shareholding the role of duality can be controlled, whereby is reduces the likelihood of the company diversifying into unrelated business sections, which shows that the company is being monitored and controlled.

It is important to examine this factor in the Malaysian environment due to the ownership composition seen in the country. Zhuang et al. (2001) indicate that family shareholders are the largest shareholders in Malaysian companies, as many of the companies started out family owned then went public. Most East Asian companies are controlled by family owners (La Porta, Lopez-de-Silanes & Shleifer, 1999), which means the managers come from the families that hold large shares in the companies. A recent study by Owens-Jackson, Robinson and Shelton (2009) found that the higher the percentage of managerial ownership in companies the lower the likelihood of fraudulent financial reporting incidences.

Now that the four characteristics of the board of directors have been covered, attention will move to the board chairman's characteristics.

Chairman's characteristics

A high concentration of family ownership (Zhuang et al., 2001) often sees the roles of CEO and chairman taken by family members. CEOs have been found to be quite influential in companies' decision-making processes (Dunn, 2004), which therefore has become the motivation for analysing chairman characteristics in relation to corporate fraud incidence. Thus, this section will explore the literature relating to the three chairman characteristics analysed in this study: chairman's duality, chairman's tenure and chairman's ethnicity.

Duality occurs when a company's CEO is also the chairman of the board of directors (Che Haat, Abdul Rahman & Mahenthiran, 2008; Haniffa & Cooke, 2002). Past research has established that the effectiveness of monitoring management activities is reduced when a company's CEO is also its board chairman (Fizel & Louie, 1990; Lorsch & Maclver, 1989; Persons, 2005).

Dunn (2004) investigated the relationship between top management team duality and the decision to release false financial information in the period 1992 to 1996. It was found that companies that have more insiders on the board are more likely to produce false financial information. This happens when the executive managers also sit on the company's board, including the CEO who, being the chairman, has control over the board's decisions. Instead of the board controlling the management, it is the reverse. This is consistent with Dechow, Sloan and Sweeney's (1996) discovery of a positive relationship between CEO duality and violations of the generally accepted accounting principles (GAAP). Also, a study carried out by Carcello and Nagy (2004) found that fraudulent companies are more likely to have the CEO as the board's chairman. Similarly, Chen et al. (2006) found that in China CEO duality is not a significant fraud deterrent. Saksena (2003) found that CEO duality is positively significant with management fraud; the existence of a dual role on the board increases the CEO's power over the board, increasing the likelihood of fraud. This is consistent with the study conducted by Bliss (2011) in Australia, which indicated that dual roles reduce the effectiveness of the board's independence in carrying out their responsibilities. Kim et al. (2009), in their study on the relationship between CEO duality and

corporate diversification in the US, found that there is a positive relationship between duality and unrelated corporate diversification. This indicates that the CEO‘s duality has a significant influence over the board, and as a result the CEO is able to pressure the board into agreeing to unrelated corporate diversification. The study also found that a higher concentration of board equity ownership and institutional ownership reduces this positive relationship, while CEO tenure and the board‘s independence increase the positive relationship between duality and unrelated corporate diversification. The findings of this study show that having a higher percentage of director shareholding and institutional shareholding increases the ability of the board to monitor and control the company‘s activities, especially in the presence of a dual CEO/chairman.

Haniffa and Hudaib (2006) found that duality is negatively related to company performance, and this supports the argument that if the CEO has too much power in decision making they may end up pursuing their own interests (Jensen, 1986). Blackburn (1994) argues that the board of directors should be able to discuss company matters independently, without the CEO as chairman, so they can effectively monitor the CEO‘s plans. Therefore, it is important for the CEO and board chairman roles to be separate.

However, Rechner and Dalton (1991) found that CEO duality can benefit the company, as management‘s compensation is based on company performance and therefore the CEO could carry out the company‘s strategic plans to increase performance without much interference from the board (the CEO as chairman will have the power to defend the company‘s strategy and action). This finding is consistent with Dey, Engel and Liu‘s (2011) discovery that compensation pay for CEO‘s with a dual role is significantly higher compared to CEOs without a dual role. This study therefore tests the relationship of dual roles with the likelihood of corporate fraud occurrences to determine whether duality does or does not contribute to corporate fraud.

Chairman’s tenure is defined as the number of years the chairman has held their post in the company. Daboub, Rasheed, Priem and Gray (1995) found that the longer the tenure, the less likely fraud is to be committed. Chen et al. (2006) found that the shorter the chairman‘s tenure, the higher the likelihood of fraud, which may be due to

a short tenure meaning less experience and knowledge of the company‘s business activities. Saksena (2003) examined the relationship between corporate governance and management fraud and found that CEO tenure is not statistically significant, which means tenure does not have a significant relationship with management fraud. The study also found that the quality of audit firms is not significantly related to management fraud.

Hill and Phan (1991) note that the longer the CEO is on the board the more influence they have over the board‘s decision-making process. Mace (1986), Patton and Baker (1987), and Vancil (1987) state that even though there is a nominating committee on the board, the CEO has the strongest influence over board selection; therefore, the CEO has the power to control the board. An established CEO, that is, a CEO who has been on the board for a long time, will be more effective in influencing the board as compared to a new CEO (Hermalin, 2005; Hermalin & Weisbach, 1988;). A CEO with a dual role and a long tenure has been found to have more influence over the board (Kim et al., 2009). Thus, this study analyses the relationship between chairman‘s tenure and the likelihood of corporate fraud.

Chairman’s ethnicity: Malaysia is a multicultural country, composed of many different ethnicities. Among those present are Malays, Chinese and Indians. Every ethnicity has its own unique cultural values and beliefs. Studies on culture have found that differences in cultural practices have influences over business practices, organizational structure, managerial style, accounting disclosure practices, auditing services and governance structures (Claessens, Djankov & Lang, 2000; Haniffa & Cooke, 2002; Hofstede, 1980; Yatim, Kent & Clarkson, 2006). As indicated by Hofstede (1980), culture determines institutional practices and how they are formed. He defines culture as _the collective programming of the mind which distinguishes the members of one human group from another‘ (p. 25) and defines value as _a broad tendency to prefer certain states of affairs over others‘ (p. 19). From these definitions culture can be described as a set of collective values or societal values (Gray, 1988). Sendut (1991) states that the study of race could be of import in a multicultural country like Malaysia as it is highly likely that each race would like to maintain their ethnic values. The common values that can be seen in a multicultural country do not necessary represent the culture of the whole country, especially if every race prefers

to maintain their own culture. Thus, ***chairman's ethnicity*** has been selected as one of the corporate governance characteristics for this study.

The notion that a powerful chairman has a strong influence over the board of directors' decisions has become the motivation for studying how power influences people in different cultures. Accounting involves both human and non-human resources; therefore, it is very much influenced by human behaviour and culture (Violet, 1983). Haniffa (2006) states that auditing practices may be influenced by two cultural aspects: ideology and socio-economic structure. Ideology refers to societal norms and values, including collectivism, fatalism, and attitudes towards time, professionalism, innovation, flexibility, religion, sentiment, ethical principles, worldview, ethos and everyday preferences. Socio-economic structure refers to factors such as the political and legal systems, the power of the profession, the tax system, and the education system (Haniffa, 2006). Chuah (1995, as cited in Haniffa & Cooke, 2002) states that Malaysian managers are likely to be influenced by race, education and the type of organization they work for. Therefore, race was selected as a suitable proxy for culture in this study (consistent with Haniffa & Cooke, 2002).

In Malaysia, the different cultural characteristics of the Chinese and Malays have a significant influence over managerial style. Chinese have been found to be secretive in their disclosures, while Malays are transparent, which may be due to the influence of their religious beliefs (Haniffa & Cooke, 2002). Haniffa and Cooke's results are in contrast with Hofstede and Gray's hypothesis,[6] which postulates that Malays are less transparent and more secretive.

Countries' accounting systems differ due to differences in culture, legal system, providers of finance, taxation and other external influences (Nobes & Parker, 2008). Differences in culture also have an influence on fraud scandals. Coffee (2005) indicates that differences in ownership structure or system of governance do have an influence over fraudulent activities. A country like the US, with dispersed ownership systems of governance, is more vulnerable to earnings management than Europe, which has a more concentrated ownership system of governance.

[6] Refer to Haniffa and Cooke (2002), cultural characteristics, Table 1, p. 325.

Culture has also been found to have an influence over a company's level of disclosure. Haniffa and Cooke's (2002) analysis of culture and corporate governance disclosure in Malaysia indicates that there is a significant association between the proportion of Malay directors on boards with the extent of voluntary disclosure. The study used race and education as proxies for culture. A study on the influence of culture on governance and audit fees in Malaysia by Yatim et al. (2006) analysed the association of culture (using race as a proxy), finding that there is a strong negative relationship between the Bumiputera-owned companies and external audit fees. Lai (2007) conducted a study on leadership and ethnicity in Malaysian public companies and found that dual roles in Chinese-controlled companies did not have any significant impact on the companies' financial performance. The study indicates that Chinese practice a distinctive culture and way of conducting business, and the adoption of a leadership structure recommended by the MCCG (separating the chairman and CEO) did not improve the performance of Chinese-owned companies.

These studies show that differences in culture do have an influence on accounting practices across all countries. Therefore, differences in chairman's cultural values and beliefs (using ethnicity as a proxy for culture) and their relationship with corporate fraud occurrences were chosen for analysis in this study. Could a chairman's cultural beliefs and way of doing business reduce the likelihood of corporate fraud?

The above discussion shows that there is a relationship between chairman duality, tenure, ethnicity and corporate fraud incidences. Now the point of focus will shift to audit committee characteristics.

3.3.1.2 Audit committee characteristics and activity

Audit committees are set up as part of the corporate governance to control and monitor companies' financial reporting. They are one of the three board committees that are important in corporate governance (Conference Board, 1993). The Sarbanes-Oxley Act (section 301) indicates that independent audit committees are required to help avert management fraud and improve the integrity of financial reporting. The audit committee characteristics examined in this study are: the independence of the audit committee, the outside directorship of the audit committee and the number of audit committee meetings held each year. Beasley (1996), in his analysis of SEC sanctions for fraud, found that the existence of an audit committee was not

significantly related to fraud occurrences. McMullen (1996) carried out the same study and made a similar conclusion to Beasley (1996). But these two studies only analysed the existence of an audit committee, not the characteristics or activity of the committee. Other studies that looked into audit committee characteristics and activity found significant relationships between audit committee characteristics and corporate fraud incidences (Abbott et al., 2004; He et al., 2009; Jensen, 1993; Lipton & Lorsch, 1992; Saksena, 2003; Uzun et al., 2004).

Abbott, Park and Parker (2000) investigated the effects of audit committee characteristics, namely ***independence and number of audit committee meetings***, on corporate fraud. The study found that there is a negative association between independent audit committee members, the number of meetings held and the likelihood of corporate fraud. The authors found that companies that held audit committee meetings twice or more a year are less likely to be sanctioned. The more frequent the board meets, the more effective they are at monitoring, which will improve the company‘s governance (Abbott et al., 2004; He et al., 2009; Jensen, 1993; Lipton & Lorsch, 1992; Uzun et al., 2004). Klein (2002) found a negative relationship between earnings management and the percentage of independent audit committee members, which is similar to the findings of Uzun et al. (2004). Owens-Jackson et al. (2009) analysed the relationship between audit committee characteristics and fraudulent financial reporting and found that independence and the number of audit committee meetings are negatively related to the likelihood of fraudulent financial reporting. The study also found that the likelihood of fraudulent reporting is positively related to companies‘ size and growth, in which the likelihood of fraud increases when companies grow bigger in size and growth increases. A study by Hence, this study analyses the relationship between the independence of audit committees, the frequency of audit committee meetings and the likelihood of corporate fraud occurring in Malaysia.

Fama (1980) states that incentives for ***outside directors*** to carry out effective monitoring of managers‘ activities come from the market for outside directors. Being a director of good reputation company signals value to the external market, which then rewards directors with additional directorships. Ferris et al. (2003) analysed the monitoring performance of directors with multiple board appointments found that multiple directorship did not reduces the effectiveness of audit committee in

performing the monitoring responsibilities (consistent with Fama and Jensen, 1983). Another study on multiple directorship and firm performance in India indicate that members with multiple directorships have positive effect on firm‘s value and they attend more meetings (Sarkar and Sarkar, 2009). Schnake and Williams (2010) indicate that holding a multiple directorship and serving on a larger board diminished the focus of the directors in their monitoring responsibilities as larger board is more difficult to coordinate.

However, the monitoring of top management is time consuming and takes much effort (Bédard et al., 2004; Morck, Shleifer & Vishny, 1988); therefore, holding more directorships will not help an audit committee member carry out their duties effectively (Bédard et al., 2004). Persons (2005) studied fraudulent companies‘ relations with corporate governance and found that fraud is less likely when companies‘ audit committee members hold fewer outside directorships and all the members are independent. This is consistent with Beasley (1996), who found that the longer the tenure of the audit committee member, the lower the likelihood of fraud. Sharma and Iselin (2012) study on the association of audit committee directorship and tenure with the financial statement occurrences found that having multiple directorship increases the occurrences of financial misstatements. As their findings suggest that multiple directorship reduces the effectiveness in monitoring companies. This finding is consistent with the study by Tanyi and Smith (2015) that the busyness of audit committee member weakens the monitoring performance. Since holding many directorship demand more of the director‘s time and effort in monitoring and evaluating company‘s financial statement. As a result the directors might be too busy to allocate enough time and effort in carrying out their responsibilities.

Thus, the literature indicates that there is a significant relationship between audit committee characteristics and the likelihood of corporate fraud occurring. However, these studies were carried out in different environments than Malaysia. In a different setting, the same consistent results may not be found. Hence, it is important to study this characteristic in Malaysia. The last corporate governance characteristic, institutional shareholdings (blockholders), is discussed next.

3.3.1.3 Institutional shareholdings (Blockholders)

Independent blockholder stock ownership is defined as outside stockholders holding at least five per cent of a company's common shares (Beasley, 1996). Gilson (1990) and Burns (2003) found that large blockholders are able to monitor effectively and can have an influence over the company's corporate governance practices that will reduce the likelihood of fraud. Shleifer and Vishny (1986) found similar results, discovering that block ownership by institutional shareholders is more effective at keeping managers from pursuing their own interests than ownership by individual shareholders. Bange and De Bondt (1998) found that having a high institutional stockholding in a company reduces earnings management related to research and development costs. Crutchley et al. (1999) investigated agency problems in financial decision making by analysing the role of institutional ownership in leverage, dividends and insider ownership. They found that increases in institutional ownership reduce agency problems, which means better monitoring and control over management decisions. Bushee (2000, 2001) also found that when companies have high institutional stockholdings it increase firms' value in the long-term earnings. Kim et al. (2009) found that a higher concentration of institutional shareholdings in a company leads to better monitoring and control of the company's activities (unrelated corporate diversification), in particular regarding a dual CEO.

A study carried out by Haniffa and Hudaib (2006) on the relationship between corporate governance structure and performance of Malaysian listed companies found that the top five substantial shareholdings and board size are significantly related to company performance, both in market and accounting measures. The discussion above shows that there is a positive relationship between the percentage of institutional shareholdings and performance and control. Consistent with other studies, a study in Malaysia by Haniffa and Hudaib (2006) gives the same results. The findings indicate that this characteristic could become the most important characteristic in reducing the likelihood of corporate fraud in Malaysia. Thus, it is important to analyse this characteristic in relation to corporate fraud in Malaysia.

Discussion

Past studies on most of the corporate governance characteristics discussed yielded mixed results. This shows that the different settings or nature of the samples are influencing the characteristics, and the purposes of the governance, leading to inconsistent results. The nature of a sample refers to its characteristics, e.g. the country or industry, while the purpose of the governance refers to the role of corporate governance with respect to performance, audit fees, managing earnings or corporate fraud. Much of the research on this topic was carried out in Western countries and other Asian countries. Studies in the field of corporate fraud in particular are still lacking in Malaysia. Given Malaysia's unique environment and background, studying these characteristics in this country is important as the results could highlight differences in corporate governance characteristics between fraudulent and non-fraudulent companies. Such a study could reveal which corporate governance characteristics have a significant relationship with the likelihood of corporate fraud occurrences in Malaysia.

The chapter will continue with a discussion on earnings management.

3.4 Earnings Management

This section will introduce the motivating factors for earnings management. This will be followed by an overview of earnings management in Malaysia and a discussion of past studies in this area.

3.4.1 Motivation for managing earnings

The act of managing earnings is not without motivations, and these motivations can be broken down into three categories: capital market, regulatory and contractual motivation (Healy & Wahlen, 1999), together with Lev's (2003) categories.

i. Capital market motivation

Motivated by the need to attract investors and maintain supplier support, managers manage earnings to give the appearance of good company performance, which can influence the share price prior to an equity offering period or management buyout, and help meet financial analyst or management earnings expectations (Healy & Wahlen, 1999). A study by Wu (1997) on earnings manipulation in 87 management

buyout cases from 1980 to 1987 found that managers manipulated earnings (downwards) prior to the management buyout proposal. This is consistent with the findings of DeAngelo (1988). Another study on management buyout and earnings management by Perry and Williams (1994) analysed the unexpected accruals (setting changes in revenues and depreciable capital as control variables) and found that managers engaged in (income-decreasing) earnings management prior to management buyout.

Past studies on managing earnings prior to equity offerings show that managers do manage earnings in order to attract investors. Teo, Welch and Wong (1998) examined the seasoned equity issuers for the period 1976 to 1989 and found that managers managed earnings upwards prior to the equity offerings. Deachow, Sloan and Sweeney (1996) investigated firms that were subjected to SEC enforcement actions for financial reporting violations and found that these companies did make seasoned equity offerings before being detected by the SEC. A more recent study by Lin, Liao and Liu (2008) on the effect of compensation structure and CEO compensation incentives found that equity-offering companies did manage earnings. Ahmad-Zaluki, Campbell and Goodacre (2009) examined earnings management for IPOs in Malaysian companies and found that earnings were managed during the economic crisis.

Studies have also found that managers manage earnings to meet analyst expectations or management earnings forecasts. Burgstahler and Dichev (1997) found that managers manage earnings to avoid reporting losses, while Burgstahler and Eames (1998, 2006) report that managers manage earnings upwards to beat analysts' earnings forecasts. Kasznik (1999) indicates that management use unexpected accruals when managing earnings upwards to meet management earnings forecasts.

ii. Regulatory motivation

Past studies have examined the relationship between earnings management and regulations (such as antitrust regulations), investigations, litigations issues, import relief investigations, political scrutiny, price regulation and taxation structure. Watts and Zimmerman (1978) indicate that firms have a tendency to manage earnings downwards when they are subject to antitrust regulations or political scrutiny. The same results were found by Cahan (1992), indicating that companies under antitrust

investigations report income-decreasing abnormal accruals. Jones (1991) examined companies' earnings during import relief investigations and found that companies that applied for import relief deferred their income in the year of application. The same result was found in Key's (1997) examination of companies in the cable television industry; companies did defer their earnings during periods of congressional scrutiny. Beatty, Chamberlain and Magliolo's (1995) analysis of earnings management in the banking industry, with a focus on taxes and regulatory capital, found evidence of managed earnings. Roubi and Richardson (1998), and Adhikari, Derashid and Zhang (2005), studied the relationship between earnings management and tax regulations. They found that companies did manage earnings in response to tax regulations or to influence tax policy.

iii. Contractual motivation

Guan, Koo and Teruya (2005) state that:

> Earnings management occurs when managers use judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers. For banks, earnings management may be of particular concern when it is engaged in to avoid technical default of debt covenants. (p. 2)

Healey and Wahlen (1999) support the notion that accounting information is used to monitor and regulate contracts between companies and stakeholders, management compensation contracts, and lending contracts. Management compensation contracts become incentives for managers to carry out their stewardship duties. This is to avoid agency cost. Meanwhile, lending contracts control managers' actions, stopping them from overusing credit to benefit companies' stakeholders (to protect creditors' interests). These contracts motivate managers to manage earnings (Watts & Zimmerman, 1978).

The early studies on earnings management and management compensation contracts date back to the 1980s, where it was found that in the US a change of CEO is due to poor company performance. Coughlan and Schmidt (1985), Warner, Watters and Wruck (1988), and Weisbach (1988) found that CEOs managed earnings when they

wanted to avoid losing their post. Healy's (1985) and Holthausen, Larker and Sloan's (1995) analyses on bonus caps in relation to managing earnings indicate that companies with caps on bonus awards are more likely to defer income when the cap is reached. Dechow and Sloan (1991) indicate that CEOs manage earnings by reducing research and development expenses in order to increase reported earnings during their final year in office. Even though Australia does not use formal compensation payments, Wells (2002) looked into Australian companies and found that companies did manage earnings due to compensations; this was to reflect on the companies' past performance.

Another study conducted in Australia by Smith, Kestel and Robinson (2001) found that distressed companies show a significant tendency to increase reported income using changes in accounting policy. Christie and Zimmerman (1994) report that poorly performing companies use opportunistic income-increasing accounting techniques. While many researchers have concluded that financially distressed companies show a tendency to increase their reported income, De Angelo, De Angelo and Skinner (1994) note that financially distressed companies tend to decrease their reported income. As a result, most of these companies would not survive in the long run if the economy continued to fall. Studies conducted in the past have indicated a trend of selecting accounting techniques that could give the illusion of a higher income. Christie and Leftwich (1990) indicate that there is a consistent positive relationship between leverage and accounting method choice. This result is supported by Christie and Zimmerman (1994), whose study found that poor troubled companies frequently use income-increasing accounting methods to present better financial results.

Debt contracts are important for creditors/lenders as they help them secure their interests by limiting companies' decision-making powers (Ronen & Yaari, 2008). DeFond and Jiambalvo (1994) and Sweeney (1994) examined companies that violated lending covenants and found that these companies managed earnings upwards, but the difference was that the first study found that companies managed earnings one year prior to the covenant violation, while the second study found that companies managed earnings after the violation. Studies on earnings management and debt renegotiation by Mohd Saleh and Ahmed (2005), focusing on distressed companies, found that

these companies did engage in earnings management (income-decreasing) during debt renegotiations with lenders.

These motives for managing earnings have at times pushed companies‘ actions to the edge of legality. Once they go beyond the legal limit earnings are considered manipulated, and this is fraud. The next section discusses the issue of earnings management and fraud.

3.4.2 Earnings management in Malaysia

The practice of earnings management in Malaysian companies is somehow different to other countries due to the country‘s unique capital market, cultural accounting practices, economic environment and legal system (Claessens et al., 2000; Haniffa & Cooke, 2002; Leuz et al., 2003; Yatim et al., 2006). The culture and capital market structure have the most influence on the practice of earnings management among companies in Malaysia. Guan et al. (2005), Hashim and Susela (2006), Doupnik (2008), Geiger and Laan Smith (2010), and Han et al. (2010) conducted a cross-country analysis of earnings management practices in Malaysia and other countries. The findings indicate that there are significant differences in the practice of earnings management between Malaysia and other countries as a result of cultural differences.

Culture determines a country‘s legal system, accounting practices, economic environment, taxation system, and people‘s adherence to their duties and responsibilities. In studying cross-country differences in institutional influences on earnings management, Leuz, Nanda and Wysocki (2003) focused on the relationship between a country‘s institutional framework for protecting outside investors and the level of firm engagement in earnings management. Leuz et al. (2003) analysed this relationship based on investor protection measures and legal enforcement measures, which are both indexes developed by La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998). The study reports a significant negative relationship between the two measures and earnings management, which means that countries with stronger enforcement and better investor protection frameworks reduce the incentive to manage earnings. Burgstahler, Hail and Leuz (2006) examined the influence of capital market incentives and institutional factors on earnings management in European countries and found that earnings management is common in countries that have a

weak legal system. Also, it is more common in privately held companies than in publicly held ones.

Most of this research studied the relationship between earnings management and corporate governance, culture, and audit quality in Malaysia. One study in particular, that by Hasnan et al. (2008), explored the relationship between earnings management and fraudulent financial reporting in Malaysia. However, the study only checked whether companies managed earnings or not using the modified Jones model. The results indicate that companies did manage earnings. Another study in Malaysia, this time by Kamarudin, Wan Ismail and Wan Mustapha (2012), looked at the relationship between aggressive financial reporting and corporate fraud (using a sample of 92 companies that violated the Malaysia Securities Commission and Bursa Malaysia rules and regulations on fraud). It found that firms that were involved in fraud employed aggressive financial reporting during the two years prior to the criminal act. The fraudulent companies sample included companies that violated a number of rules, including: submission of accounts rules, insider trading/market manipulation, reported profit/loss inconsistent with audit and other breaches. The high concentration of family ownership of companies, as well as ethnicity, had an influence over the earnings management practices in Malaysia; this means that findings from other countries might not be generalizable to Malaysia (Haniffa & Cooke, 2002; Zhuang, 1999).

Using Hofstede‘s (1980) and Gray‘s (1998) cultural dimension as a proxy for culture, and discretionary accruals as proxy for earnings management, a study by Guan et al. (2005) on five Asian-Pacific countries found that there were significant differences among the countries and their level of earnings management. One of the countries studied was Malaysia. This is perhaps the first study that empirically linked culture with earnings management.

Doupnik (2008) indicates that there are two reasons for the differences in level of earnings management across countries: first is that the institutional factors influencing the level of earnings management differ between countries in terms of their strength; and second, there are differences in other factors that could influence the level of earnings management, such as economic incentives. Doupnik (2008) conducted a study on 31 countries to assess the relationship between culture and earnings

management. He used Hofstede's four cultural dimensions as the proxy for culture. The study found that there was a significant difference between culture and earnings management, especially earnings smoothing, among countries. The study also found that from Hofstede's four cultural dimensions, individualism and uncertainty avoidance were the most related to earnings management.

Geiger and Laan Smith (2010) examined the effect of institutional and cultural factors on perceptions of earnings management across 13 countries (Malaysia included). The study analysed the perceptions of people with stakeholder-oriented institutional backgrounds and those with shareholder-oriented institutional backgrounds on the practice of earnings management (accounting earnings management and operating earnings management). The study found that stakeholder-oriented individuals are not as accepting of earnings management activities as shareholder-oriented individuals. The study also examined one of the Hofstede's cultural dimensions, secrecy, and found that people from secretive cultures are more accepting of both types of earnings management. Han et al. (2010) studied the relationship between culture, legal enforcement and managers' exercise of earnings discretion in 32 countries, including Malaysia. This study used Hofstede's four cultural dimensions as the proxy for culture and investor protection framework as the legal enforcement proxy. Consistent with previous studies, Han et al. (2010) found that individualism and uncertainty avoidance are related to earnings discretion. In countries with strong investor protection, individualism has a positive association with earnings discretion. Also, there is a negative association between uncertainty avoidance and discretionary accruals in countries with weak investor protection.

Clearly, Malaysian businesses are not excluded from the problem of earnings management and manipulation. The relationship between earnings management and the likelihood of corporate fraud has triggered the need for a study on this topic in the Malaysian context. Differences in the cultural, legal and business environments do have an influence on earnings management; so Malaysia's unique cultural dimension has made it important to study earnings management in this country. The following section discusses the past research on earnings management.

3.4.3 Past research on earnings management

This section explores the research that has been carried out on earnings management. The discussion first touches on the research on earnings management and fraud, then moves on to the link between earnings management and corporate governance.

3.4.3.1 Earnings management and fraud

Earnings are managed for opportunistic or informational reasons; therefore, Godfrey et al. (2010) state that research on detecting earnings management is undertaken from two perspectives: the opportunistic perspective and the informational perspective. Under the opportunistic perspective, earnings are managed as a result of fraud, meeting industrial regulations, during equity offerings, for debt covenants or for the purpose of meeting management compensation goals. While from the informational perspective, earnings are managed for signalling purposes or to present fair values of accounting numbers. Godfrey (2010) further states that despite the differences, management is said to have insider knowledge of companies' performance and therefore is able to choose whether to report accounting numbers towards the fundamental value (informational perspective) or away from the fundamental value (opportunistic perspective). The opportunistic perspective has the management choose to divert away from providing true earnings information, while the informational perspective has managers provide true information to the users. Godfrey et al. (2010, p. 430) state that fraud (under the opportunistic perspective) _is the most extreme variant of earnings management used by managers to deceive financial statements users'.

Godfrey et al. (2010) demonstrated six ways to detect earnings quality and the probability of accounting management. They are:

i. **Share price reaction**: this can be used as an indicator of quality. However, Sloan (1996) notes that the market does not fully understand accruals and tends to overreact to positive income, increasing accruals.

ii. **Financial analysts' reactions**: these can be used, but it is suggested that there may be bias.

iii. **Auditors**: reports and opinions from auditors can be used; however, there is an issue regarding auditor independence.

iv. **Board of directors**: the strength of corporate governance can be used as an indicator and is considered as quality information.

v. **Discretionary accruals**: information on the types of accrual being managed is important as it depends on the management's purposes in managing earnings (i.e. for new equity offerings, taxation and management buyout).

vi. **Insider trading reaction**: future earnings and returns can be predicted more accurately by analysing whether insider trading increases or decreases accruals, as insiders have specialised knowledge of the firm.

A discussion of earnings management cannot proceed without first understanding what earnings are, their importance and how they are managed. The importance of earnings explains the motivation for companies to manage earnings to a point that reaches the level of fraud.

There have been quite a number of definitions for earnings management. Ronen and Yaari (2008) classify the various definitions into three categories: white, gray and black. A summary of these categories is as follows (Ronen & Yaari, 2008, p. 25):

White – Earnings management takes advantage of flexibility in the choice of accounting treatment to signal the manager's private information on future cash flow.

Gray – Earnings management is choosing an accounting treatment that is either opportunistic (maximizing the utility of management only) or economically efficient.

Black – Earnings management is the practice of using tricks to misrepresent or reduce the transparency of financial reports.

The *white* category is for definitions of beneficial earnings management that could improve transparency in financial reporting. Stolowy and Breton (2003) indicate that earnings management in not an act of fraud; it is within the limits of GAAP (while fraud is beyond the limits of GAAP) and is another form of accounts manipulation. They define accounts manipulation as _the use of management's discretion to make

accounting choices or to design transactions so as to affect the possibilities of wealth transfer between the company and society fund providers or managers' (p. 20). Another definition of earnings management that falls in this category is earnings management as a deliberate action taken in order to achieve a level of reported earnings that is within the GAAP limits or boundaries (Koumanakos, Siriopoulos & Georgopoulos, 2005). According to Jones (2011), earnings management uses the flexibility within accounting to meet desired objectives (profit forecasts).

Earnings management is a subjective matter when it comes to the interpretation of earnings figures; therefore, this is not an act of fraud (Diana & Madalina, 2007) as it does not benefit the management nor decrease the firm's value (Jiraporn, Miller, Yoon & Kim, 2008). Earnings management is also seen as an ethical/legal practice that can increase the informative value of financial statements (Watts & Zimmerman, 1986; Holthausen, 1990; Peasnell et al., 2001; Glover & Sunder, 2003). This is consistent with Ronen and Yaari's (2008) *gray* category, which considers earnings management to be manipulation of financial reports within the allowable limits of the applicable standards. This can either be opportunistic or enhance efficiency. A study by Hunton, Libby and Mazza (2004) on transparency in reporting and its relationship with earnings management detection found that a more transparent reporting format reduces earnings management practices. This is because the more transparent format will subject the report to more user scrutiny. As a result this could damage the company's share price and the credibility of the financial reports, therefore reducing earnings management practices.

Nevertheless, without violating accounting standards, earnings management can still give inaccurate financial information that could mislead users (Abdul Rahman & Ali, 2006; Jones, 2011). The *black* category refers to the definition of illegal misrepresentation and fraud; for example, Schipper (1989, p. 92) defines earnings management as ‗a purposeful intervention in the financial reporting process with the interest of obtaining some private gain'. Also in the *black* category, Healy and Wahlen (1999) give the following definition:

> Earnings management occurs when managers use judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the

> company or to influence contractual outcomes that depend on reported accounting numbers. (p. 368)

Ronen and Yaari (2008) offer another definition of earnings management that consists of three parts: measures earnings against short-term truth, attaches subjective value to earnings management and describes how earnings management is achieved.

Consistent with this study‘s main theme of corporate fraud, the definition by Healy and Wahlen (1999) is the most appropriate for use in analysing earnings management, where earnings are managed beyond GAAP limits and the activity is fraudulent.

Corporate earnings have always been one of the important indicators of company performance. Lev (2003) states that corporate earnings are important for the following reasons:

i. They are part of investors‘ valuation models, which have an impact on share prices and managers‘ compensation.

ii. They are a measurement of managers‘ performance and quality by companies‘ boards and institutional investors.

Ronen and Yaari (2008) state that earnings are important due to the importance of accounting information. The importance of earnings opened a pathway to earnings management, which became a strong incentive to manipulate earnings (Lev, 2003). Lev states that such earnings manipulation can be classified into three overlapping categories: personal gain, continuation of investors‘/suppliers‘ support and satisfying contractual arrangements, which are consistent with Healey and Wahlen‘s (1999) classification in their review of earnings management motivation. However, the difficulties in differentiating legitimate earnings management from illegitimate earnings management remain a problem to be solved.

Earnings management that is done within the GAAP is legal. Earnings manipulation/fraud happens when the management‘s interventions to achieve the desired earnings violate GAAP (Ronen & Yaari, 2008). Since the difference between earnings management and earnings manipulation/fraud lies in the level of materiality (material misstatement), it is important to establish the material level that could differentiate between legitimacy and outright fraud (Schipper, 1989). Unfortunately, it

is hard to differentiate between legitimate earnings management and illegitimate earnings manipulation, as indicated by Wells (2001):

> Fraud by its nature is easy to conceal and difficult to detect; an entity that manipulates its earnings only once might avoid discovery altogether. But manipulating financial statements is usually a continuous process that grows and deepens. (p. 83)

Rosner (2003) studied earnings management in failing firms and argues that earnings management can be distinguished from earnings manipulation/fraud by the earnings manipulation proxy variables' magnitude. She states that lower or immaterial magnitudes can be considered as earnings management, while higher magnitudes are more likely material earnings manipulation. The benchmarks of materiality used in her study to differentiate earnings management from earnings manipulation are:

i. FASB SFAC No. 2 (Financial Accounting Standards Board, 1980), Appendix C: Quantitative Materiality Considerations suggest benchmarks such as 5% of assets, 10% of individual accounts and 5-10% of net income. SEC SAB No. 99 suggests that a 5% threshold is commonly used as a rule of thumb. If earnings are managed more than the suggested benchmark, it could indicate earnings manipulation.

ii. Thomas and Zhang (2000) hypothesize that the benchmark for mean total accruals of firms with no incentives to manage earnings is -5% of beginning-of-year assets and current accruals of 0. If firms have a mean of total accruals and current accruals more than the suggested benchmark, it could indicate earnings manipulation.

The literature on earnings management indicates that earnings are managed in many ways. Ronen and Yaari (2008) give the following methods:[7]

i. Choice of methods accepted under GAAP.
ii. Timing of new standard adoption.
iii. Choices of accounting estimates allowed under GAAP.
iv. Classification of items either above or below the line of operating earnings in the financial statement.

[7] Which have been noted by many researchers; refer to Ronen and Yaari (2008, p. 31).

v. Related operating, investment and financing decisions.
vi. Structuring transactions in order to meet the target results (income).
vii. Timing of income and expenses recognition.
viii. Managing financial statement transparency and informativeness of earnings.

The PwC economic crime surveys and KPMG fraud surveys from 2000 to 2009 highlight revenue recognition and asset misappropriation as being among the frequent fraudulent acts committed (KPMG, 2002, 2004, 2009; PricewaterhouseCoopers, 2003, 2007b, 2009). This emphasises the importance of studying earnings and their relationship with corporate fraud.

For the purposes of this study, the approach used involved analysis of earnings management indices and ratios (whether they be income increasing or decreasing, as well as total accrual).

Earnings management is one of the methods used in fraudulent financial reporting by managers in order to meet Wall Street's earnings forecasts (Grant, De Pree & Grant, 2000). Earnings management has been related to fraudulent financial reporting in which fraudulent acts may be committed through various accounting choices. Dhaliwal, Salamon and Smith (1982) state that management can either increase or decrease the various accounting numbers by selecting different accounting valuation methods. Persons (1995) examined the financial data of companies listed under the SEC enforcement release and its ability to identify factors associated with fraudulent financial reporting. It was found that financial leverage, capital turnover, asset composition and firm size are significantly associated with fraudulent financial reporting. Chow and Rice (1982) found that as companies' leverage increases so does the transfer of wealth from debt holders to managers, which may increase the tendency of managers to manipulate financial statements in order to meet the debt covenant.

Apart from leverage/debt covenant, sales, accounts receivable, allowance for doubtful debt and inventory were also found to be manipulated by management due to their subjective nature of judgement and difficulty to audit (Feroz, Park & Pastena, 1991; Green, 1991; Loebbecke et al., 1989; Persons, 1995; Schilit, 1993; Wright & Ashton, 1989). Summers and Sweeney (1998) studied fraudulent financial reporting and found that companies manipulated the figures of uncollected accounts and obsolete

inventory due to the subjective nature of the judgement in the method used. The study also found that insiders reduced their shareholdings when fraud was present.

Beneish (1999b) carried out an investigation on the incentives and penalties related to earnings overstatement in companies under SEC accounting enforcement action. He determined that managers overstated earnings to exercise their stock options. Beneish (1999a) examined companies that were charged with earnings manipulation under SEC accounting enforcement release over the period 1982 to 1992. He analysed financial data in the form of financial indexes or ratios. The results show that out of eight indexes studied, five were found to be significantly related to manipulators' companies; that is, the study found that 50% of the manipulators' companies did manage earnings. Lee, Ingram and Howard (1999) analysed the differences between earnings and operating cash flow in fraudulent companies. They found that there is a high level of earnings over operating cash flow in fraud cases. Dechow, Sloan and Sweeney (1996) studied companies subjected to SEC enforcement action for violations of GAAP and found that the companies managed earnings to attract external financing.

Rosner (2003) examined earnings management variables in distressed companies and non-distressed companies found that companies that are on the verge of bankruptcy appeared to show signs of material income-increasing earnings manipulation as compared to the control group (non-distressed companies). The study found that there is a significant increase in receivables, inventory, property, plant and equipment, sales, networking, and current and discretionary accruals for companies approaching bankruptcy.

A study carried out by Hasnan et al. (2008) on the relationship of earnings management and fraudulent financial reporting in Malaysia indicates that there is a significant positive relationship between earnings management and fraudulent financial reporting. Kamarudin, Wan Ismail and Wan Mustapha's (2012) study on the relationship between aggressive financial reporting and corporate fraud (using a sample of 92 companies that violated the Malaysia Securities Commission and Bursa Malaysia rules and regulations) indicates that firms involved in fraud employed aggressive financial reporting during the two years prior to the occurrence of fraud.

A study conducted in the US by Perols and Lougee (2010) indicates that companies that previously engaged in earnings management are highly likely to commit fraud. By analysing 54 fraudulent and 54 non-fraudulent companies, the authors found that fraudulent companies did manage earnings prior to the year of fraud by meeting or beating analyst forecasts and inflating their revenue. The above review shows that there is some relationship between earnings management and corporate fraud incidences. The chapter will now continue with a discussion of earnings management and corporate governance.

3.4.3.2 Earnings management and corporate governance

The role of corporate governance is to monitor and control companies‘ activities and management‘s decision making. Incidences of earnings management are strongly related to companies‘ corporate governance structures. Weaknesses in companies‘ corporate governance result in weaknesses in companies‘ internal controls (Beasley et al., 1999). Weak internal control and a poor corporate governance structure mean that the control and monitoring systems are weak as well, which may result in a failure to control managers‘ decisions, including the level of earnings management.

Dechow et al. (1996) examined companies that manipulated earnings and found that such companies are more likely to have: a management-dominated board of directors, CEO as chairman of the board and CEO as company founder. They are less likely to have: an audit committee and an outside blockholder. Xie et al. (2003) looked at the role of the board of directors and audit committee in obviating earnings management. They report that the more frequent the board and audit committee meet, and the more knowledgeable the members are, the lower the level of discretionary accruals. A study carried out in Canada by Park and Shin (2004) on the effect of board composition on earnings management shows that outside directors and the tenure of outside directors do not reduce abnormal accruals, but having a director with a financial or accounting background, as well as institutional blockholders, does reduce abnormal accruals. The study also found that companies have the tendency to manage earnings upward in order to avoid reporting earnings losses or declines.

A study conducted in the UK by Peasnell, Pope and Young (2005) on the relationship between board monitoring (the roles of outside directors and audit committees) and earnings management found that the proportion of independent directors on the board

is negatively related to the likelihood of managers managing earnings upwards in an attempt to avoid reporting losses. It was also found that having an audit committee did not affect the degree of income increasing or decreasing manipulation by the managers. A study in Australia by Davidson, Goodwin-Stewart and Kent (2005) examined Australian firms‘ corporate governance mechanisms for curbing earnings management (measured by the level of discretionary accruals), in particular the roles of the board and audit committee, internal audit functions, and the choice of external auditor. The study determined that a higher proportion of non-executive directors in both board and audit committee is significantly associated with reducing the likelihood of earnings management. The existence of internal audit functions and the choice of external auditor were found to be insignificant in reducing the level of companies‘ discretionary accruals. Jin Kim and Suk Yoon (2016) study on the impact of corporate governance on earnings management in Korea found that independent directors, ownership structure, foreign ownership, leverage ratios and firm size significantly affect the discretionary accruals and total accruals (decrease the level or earnings management) of companies studied. The study indicates that corporate governance and earnings management are significantly related.

Weber (2006) examined the sensitivity of executive wealth to the fluctuations of stock price and this factor‘s possibility as an incentive for earnings management, as well as its association with corporate governance. The study found that there is a positive association between CEO wealth sensitivity and measures of abnormal accruals. The study also discovered that there is no significant association between corporate governance and CEO stock-based wealth sensitivity and income smoothing. Bradbury et al. (2006) analysed the relationship between board characteristics, audit committee characteristics and abnormal accruals. The study determined that the size of the board and audit committee independence is associated with lower abnormal working capital accruals. Audit committees are also effective at reducing the income-increasing abnormal accruals‘ level. The study indicates that audit committees are effective when all the members are independent. This result is consistent with Klein‘s (2002). Ebrahim (2007) examined the relationship between earnings management behaviour and board and audit committee activity and found earnings management to be negatively related to both.

A study in Malaysia on the relationship between audit committee characteristics and earnings management reported that companies that have a fully independent and knowledgeable audit committee and more frequent audit committee meetings show less earnings management (Mohd Saleh, Mohd Iskandar & Rahmat, 2007). A study by Hasnan et al. (2008) investigated management predisposition, motives, opportunity and earnings management for fraudulent financial reporting in Malaysia, where one of the proxies used for opportunity was a poor corporate governance structure. The study found that poor corporate governance structures are significantly related to fraudulent financial reporting. Also, the insignificant role of an independent board of directors in reducing earnings management is consistent with the findings of Hashim and Susela (2006), and Abdul Rahman and Mohamed Ali (2008).

Grove and Basilico (2008) examined the detection of fraudulent financial reporting using financial ratios and corporate governance characteristics. They studied earnings manipulators and non-earnings manipulators for a year prior to the public being informed of the fraud. The study found that three indices, namely gross margin index, sales growth index and account receivables index, were higher in the earnings manipulating companies, which could be used to indicate fraudulent financial reporting. The study also found that fraudulent companies have powerful CEOs, weak systems of management control, higher turnover of senior managers, insider stock trading and questionable business strategies. Wang, Chuang and Lee (2010) examined the effect of board of director characteristics and composition, and earnings management on fraud in Taiwanese listed companies and found that earnings management did not have an influence on fraud. This may be due to the ownership structure of Taiwanese companies, many of which are family owned and very seldom have separate ownership and management.

Study carried out by Kasipillai and Mahenthiran (2013) on the practice of deferred in managing income and the role of governance in Malaysia found that Malaysian companies used the component in deferred tax to manage income in order to avoid declining in income. The study also found that the practice is more common in highly concentrated ownership‘s companies with less independent director and small board size.

3.5 Summary

The results of all the studies discussed in this chapter indicate some relationship between earnings management, corporate governance and fraud. Few researchers have studied the relationship between earnings management and corporate fraud in the Malaysian context, which is what motivated this study. Due to its differences in culture, law and business environment, it is important to research this topic in Malaysia. The results of past research did show inconsistencies in the relationship, which could suggest that setting has some effect on earnings management. The review of past research helped in formulating research questions three and four of this study. Now that the related studies have been explored, the next chapter will move on to the framework and hypotheses development for this study.

Chapter 4
Research Framework and Development of Hypotheses

This chapter describes the research framework for the study and how the hypotheses were developed. The research framework becomes the foundation for the study, whereby it logically develops, describes and elaborates the associations among the variables that are relevant to the study topic. The chapter will start with the problem statement and the selection of variables: corporate governance characteristics and earnings management variables. This is followed by an explanation of the development of the hypotheses.

4.1 Research Framework

Corporate fraud can be committed in many ways, including asset misappropriation, and accounting and auditing fraud. The results of the PwC (2007b, 2009) crime survey show that for the types of fraud committed, asset misappropriation is more common than accounting and auditing fraud. However, the losses are higher for accounting and auditing fraud as compared to asset misappropriation. This shows that accounting and auditing fraud have more serious consequences especially, to capital market participants. Accounting and auditing fraud relate to companies' financial reports, so they are also known as fraudulent financial reporting. This type of fraud is a major concern to capital market participants as they use financial reports as important sources of information.

Arens (2007, pp. 342-343) defines fraudulent financial reporting as "an intentional misstatement or omission of amounts or disclosures with the intent to deceive users', while misappropriation of assets is "fraud that involves theft of an entity asset'. The severity of damages and losses due to accounting and auditing fraud became the motivation for this study. The goal is to analyse the ability of financial reports to indicate if a company is at risk of fraud.

Rezaee (2005) stated that investors are able to make good decisions because of the reliability, transparency and uniformity of financial reporting. Financial statements are

one of the important sources of information used in decision making, planning and control of economic resources (Harvey, Atrill, McLaney & Jenner, 2003). For external users, financial reports, which are presented in annual reports, are the only publicized source of information they can depend on in making decisions, planning and controlling their economic resources for investment purposes. Rezaee (2005, p. 278) further states that _published audited financial statements that reflect a true and honest financial performance instead of a rosy picture and inflated and fraudulent earnings are useful to market participants, including investors and creditors'. Consequently, it is crucial for the financial information provided in annual reports to be reliable and relevant.

However, recent times have seen companies that appeared to be financially sound going bankrupt because of fraudulent activities. This has increased market participants' expectations for corporate governance to be more vigilant and active in ensuring the integrity, transparency and quality of financial information (Rezaee, 2005). The calculation of income under the generally accepted accounting principles (GAAP) is said to be an _imperfect measure of economic income or fundamental value' (Godfrey, Hodgson, Tarca, Hamilton & Holmes, 2010 p. 45). Godfrey et al. (2010) states that imperfect measures are due to the inconsistency and imprecise definition of accounting standards among countries, where there are differences in the interpretations of estimates by accountants. This in turn is due to the nature of subjectivity and cultural differences. The differences in the institutional setting (e.g. socio-economic, legislation and culture) may have influence over the governance system (Ahrens, Filatotchev and Thomsen, 2011; Aguilera, Filatotchev, Gospel and Jackson, 2008; Aguilera and Jackson, 2003). Institutional theory…

In determining the data and variables to be used in this study, the past literature and recent issues relating to corporate fraud or fraudulent financial statements were analysed. Weak internal control has been found to be the reason for corporate fraud and failure (Beasley, 1999), and therefore this was the starting point in determining the variables. Since it is not easy for external users to obtain information on companies' internal control systems or structures, this study looks into what contributes to the weaknesses in companies' internal control: the corporate governance structure. Weaknesses in corporate governance structures have been linked to weaknesses in companies' internal control systems, which make room for

fraudulent reporting and earnings manipulation. Theoretically, weak governance structures result in weak control and monitoring of company activities, which could contribute to more earnings manipulation or management and as a result raise the likelihood of corporate fraud. Weak governance will increase agency problem as well as agency cost where more costly effort have to be constructed to control and monitor managers and companies activities. Agency theory assumed that the goal of agent (managers) and principal (owners) is not the same (Hill and Jones, 1992). This means that agent will not always act in the best interest of the principle (Ross, 1973; Jensen and Meckling, 1976). As a result, the manager might not work towards the goal of profit maximization (shareholders' wealth) but towards their own self-interest therefore destroy the relationship between the managers and shareholders. The development of corporate governance is based on this basic problem. The corporate governance imposed control on the company's activities which control the managers as well as the role of monitoring. This control and monitoring effort is there to reduce the effect of agency problem or conflict.

Claessens (2006) state that there is other factors that have influence on corporate governance framework such as historical and cultural background and institutional arrangement. These other factors is referred as institutional setting, is the base of institutional theory. Agency theory did not cover these other factors. Discussion on institutional theory is very wide and dated back to the late 19th century. Scott (2008, p. 48) states that institution;

- Institutions are social structures that have attained a high degree of resilience.
- Institutions are composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life.
- Institutions are transmitted by various types of carriers, including symbolic systems, relational systems, routines, and artefacts.
- Institutions operate at multiple levels of jurisdiction, from the world system to localised interpersonal relationships.
- Institutions by definition connote stability but are subject to change processes, both incremental and discontinuous.

Hence, institutional theory is an in depth theory of social structure by which the structures, including schemes, rules, norms, and routines, is established as authoritative guidelines for social behaviour. Both rules (base on agency theory) and institutional setting (institutional theory) is important in the development of corporate governance framework. Thus, the agency theory and institutional theory become the underpinning theory for this study where the effectiveness of corporate governance is affected by the setting studied (institutional setting). Hence, corporate governance characteristics and earnings management indices/ratios were selected as the variables for this study.

The research framework for the data analysis in this study was developed based on the research questions (see chapter one, section 1.3). First, this study analyses the corporate governance characteristics and earnings management indices/ratios for both groups of companies (non-fraudulent and fraudulent). In analysing and establishing the variables, 11 corporate governance characteristics and 9 earnings management indices/ratios were studied. The variables of corporate governance were established by reviewing the Malaysian Code of Corporate Governance (2001) and past literature. Figure 4-1 shows the overall research framework for this study.

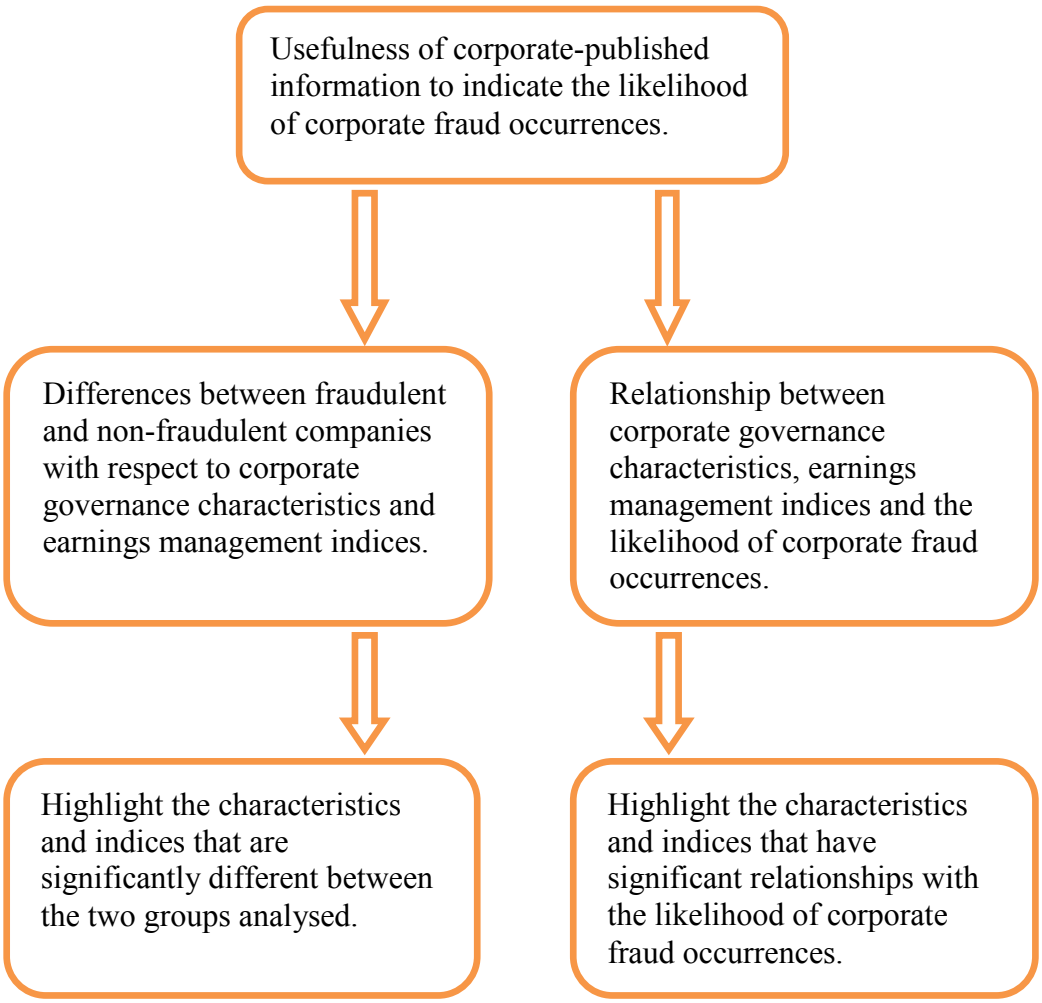


Figure 4-1: Overall Research Framework

This study aims to examine the usefulness of corporate-published information in indicating if a company is at risk of fraud. This will be done by first analysing the differences in corporate governance characteristics and earning management indices between fraudulent and non-fraudulent companies, thus answering questions one and three. The hypotheses relating to corporate governance characteristics and earnings management variables will be tested to determine the differences between fraudulent and non-fraudulent companies (testing hypothesis (a)). This is depicted in Figure 4-2.

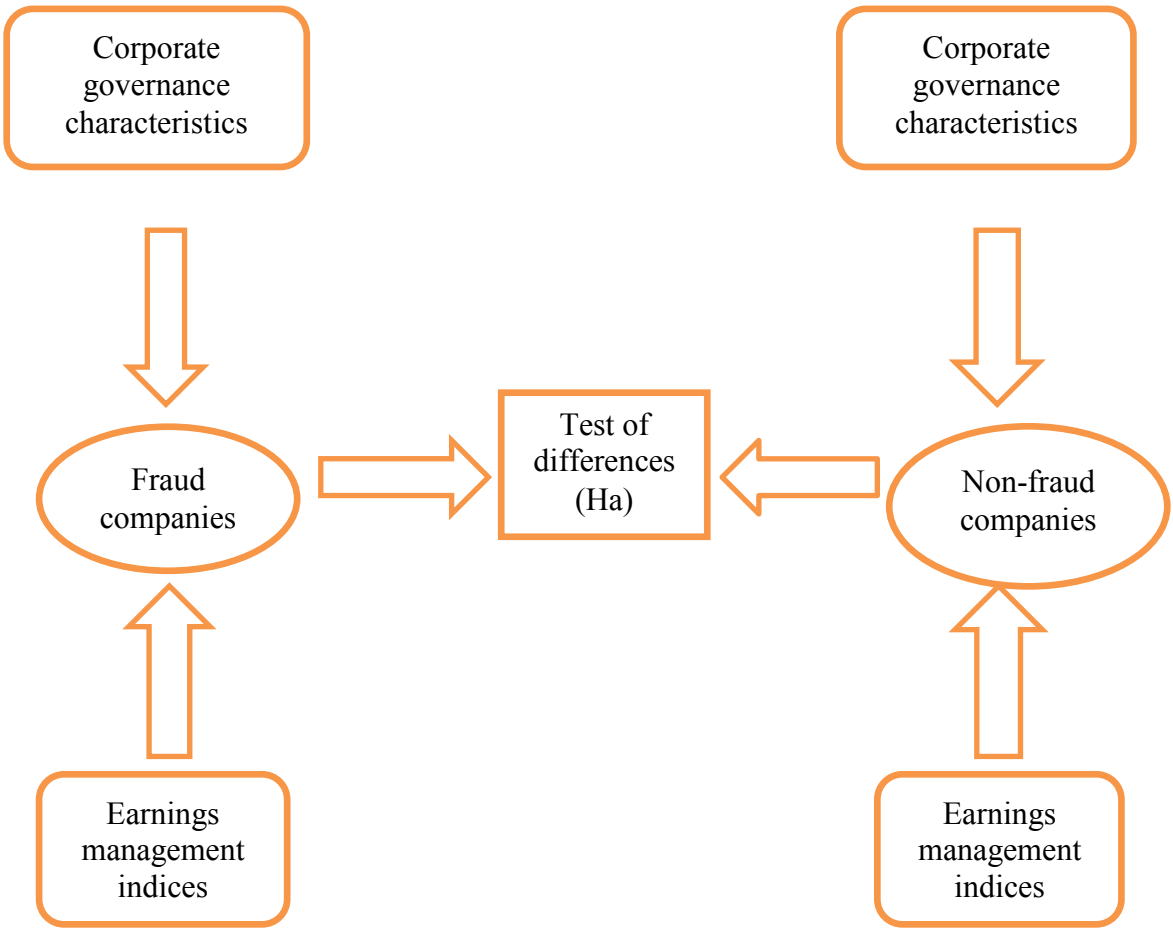


Figure 4-2: Framework for Testing Differences Hypothesis (Ha)

To answer questions two and four, a logistic regression model will be used to determine the relationship between the variables and the likelihood of corporate fraud occurrences (testing of hypothesis (b)). This is depicted in Figure 4-3 below.

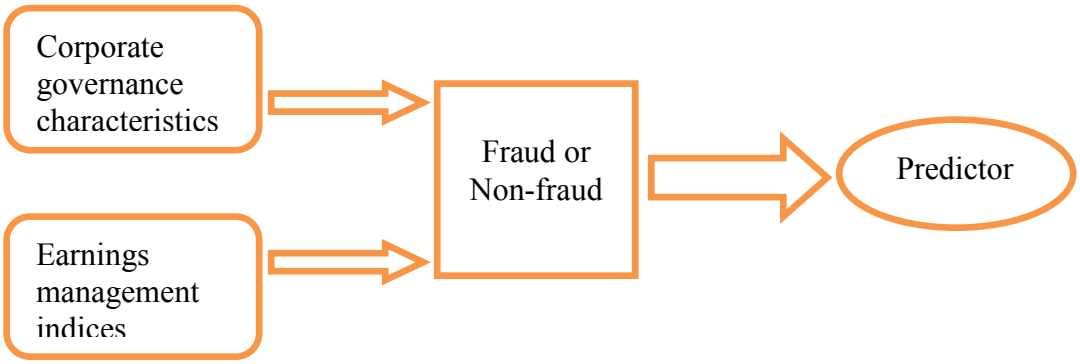


Figure 4-3: Framework for Testing Relationship Hypothesis (Hb)

The following section continues with the explanation of how the hypotheses were developed for this study.

4.2 Hypotheses Development

After the relevant and important variables have been identified and the logical relationships among the variables established, the next step is to test the relationships that have been developed. The results of the tests will provide reliable information on the kinds of relationships that exist among the variables, which could suggest what could be done to solve or reduce the problem under investigation. This process is known as hypotheses development. Sekaran (2005, p.85) defines a hypothesis as ‗a logical conjectured relationship between two or more variables expressed in the form of a testable statement'. Basically, there are two formats for hypotheses: directional and non-directional hypotheses, and null and alternate hypotheses.

Directional hypotheses state the direction of the relationship between the variables, while non-directional hypotheses do indicate a relationship or difference, but do not offer any indication of the direction of the relationships or differences. A null hypothesis proposes a definitive, exact relationship between two variables, which is general and expressed as no (significant) relationship/difference between two groups. On the other hand, an alternate hypothesis indicates relationships/differences between two variables (Sekaran, 2005). Since the true situation in the population is not known, inferences are drawn based on the findings in the sample studied; therefore, the null hypothesis is formulated so it can be tested for rejection to allow for the alternate hypothesis to be supported, indicating a relationship/difference between the variables (Sekaran, 2005). Therefore, this study uses null hypotheses for testing the differences in the variables between non-fraudulent and fraudulent companies, as well as for testing the relationship between the variables studied and the likelihood of corporate fraud.

4.2.1 Corporate governance characteristics and hypotheses

According to agency theory, conflict between the agent and principle is unavoidable. Managers are expected to carry out their duty to protect the interest of shareholders as well as other minority stakeholders in the company. The difference interest of managers, shareholders and other stakeholders increases the need for effective

corporate governance to control and monitor company‘s activities. Board composition and size are the most important internal control mechanism against agency problem (Fama and Jensen, 1983; Singh and Davidson, 2003). In the scope of institutional theory, Malaysian unique background does have significant impact on company‘s corporate governance structure (Claessens, 2006). This relates to among others the size of board, ethnicity of directors, institutional and managerial shareholdings. The Malaysian Code of Corporate Governance best practices highlight three main areas of governance: the board of directors, accountability and auditing, and shareholders. These three areas were set as guidelines to assist companies in developing their corporate governance practices. The first is the board. The guidelines highlight the principal responsibility of the board, constitution of an effective board, size of non-executive participation, appointments to the board, structure and procedures of the board, and relationship between the board and management. Second is accountability and auditing; the focus here is on audit committees‘ characteristics, roles and functions. The third area is shareholders, which involves the relationship between the board and the shareholders.

Based on the Malaysian Code of Corporate Governance best practices and previous studies (Albrecht et al., 2004; Audra, Casares, Jonathan & Charu, 2007; Beasley et al., 1999; Beasley, Carcello & Hermanson, 2000; Bédard et al., 2004), 11 corporate governance variables were selected for this study. They are:

i. Independence of board directors
ii. Size of board of directors
iii. Frequency/number of board meetings held in a year
iv. Managerial/directors shareholding
v. Chairman‘s duality
vi. Tenure of board‘s chairman
vii. Ethnicity of board‘s chairman
viii. Independence of audit committee members
ix. Outside directorships held by audit committee members
x. Frequency/number of audit committee meeting held in a year
xi. Institutional shareholding/blockholder stock ownership

Hypotheses development for corporate governance characteristics

To answer the research questions, the following hypotheses were developed. In examining the non-financial factors associated with corporate fraud the selected variables for corporate governance will be used. The hypotheses were developed to test the corporate governance variables on two groups of companies (fraudulent companies) and control companies (non-fraudulent companies) to examine the differences in the variables. The Malaysian Code of Corporate Governance (Part 2: Best Practice in Corporate Governance) lists three important areas in company governance: board of directors, accountability and auditing, and shareholders. This study examines the characteristics of board of directors and audit committee members, which are part of the requirements of the Malaysian Code of Corporate Governance. Analysis will be performed on 11 variables under board of directors and audit committee characteristics as follows:

i. Independence of board directors (INBOD)

Independent board directors are those who are not employees or part of the company's subsidiaries' management team. Shamser and Annuar (1993, p. 44) define independence of board members as _the proportion of outside directors to the total number of directors'. This variable has been found to be a significant factor for good governance by many researchers (Beasley, 1996; Beasley et al., 2000; Jensen, 1993; Xie et al., 2003). However, a study conducted in the Malaysian setting found this variable not significant in board monitoring (Abdul Rahman & Mohamed Ali, 2008; Che Haat et al., 2008; Hashim & Devi, 2008; Hasnan et al., 2008). For this study, independence of board directors is measured by the proportion of outside directors to the total number of directors on the board. The terms independent board directors or outside directors will be used interchangeably throughout this study.

Jensen (1993) and Lipton and Lorsch (1992) found that a board with a higher percentage of independent directors provides better decision control and monitoring of management activities. Xie et al. (2003) found a significant negative relationship between the percentage of outside directors and earnings management activities. Beasley (1996) states that more independent directors on the board significantly reduces the likelihood of financial statement fraud.

A higher percentage of independent directors provides better control and monitoring of management activities and reduces the likelihood of corporate fraud. On the other hand, Li and Ang (2000) conclude otherwise as their study found that a greater number of outside directors does not change the effectiveness of directors' performance in monitoring and controlling management activities. Hasnan, Abdul Rahman and Mahenthiran (2008) find that outside directorships or independent directors do not have a significant relationship with fraudulent financial reporting in Malaysia. Therefore, this study empirically tests the following null hypothesis:

H1a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the independence of the board of directors.

H1b: There is no significant relationship between the independence of the board of directors and the likelihood of corporate fraud.

ii. Size of board (TBOD)

Size of board refers to the number of directors on the board. Previous research has found that having too many or too few directors does affect the ability of the board to monitor and control the activities of the management and the company (Beasley, 1996; Jensen, 1993; Lipton & Lorsch, 1992; Yermack, 1996). For a board to be effective at controlling and monitoring managers, the number of board directors should be seven or eight (Jensen, 1993; Lipton & Lorsch, 1992). Yermack (1996) indicates that the smaller the number of directors on the board, the more effective the board is in carrying out their function. This is consistent with the finding of Beasley (1996) that more members on the board increase the likelihood of financial statement fraud as it reduces the effectiveness of the controls. Xie et al. (2003), on the other hand, state that having a larger board is associated with less earnings management activities. The Malaysian corporate governance did not specify the exact number for the board, it only required for the number of director to be appropriate. Though in most practices, the number of members on the board depends on the size of the company, there are still differences in the number among company in the same size, as size does not mean an exact value. In the scope of institutional theory, the differences in cultural values and concentration of ownership do have influence in determining what size is

appropriate. Past studies provide mixed results about the size of the board; therefore, this study will examine the differences (if any) in the number of directors on the board between fraudulent and non-fraudulent companies. Thus, this study tests the following null hypothesis:

H2a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the size of the board.

H2b: There is no significant relationship between the size of the board and the likelihood of corporate fraud.

iii. Frequency/number of board of directors meetings in a year (BODMEET)

This variable refers to the number of meetings the board has per year. The board is more effective at monitoring when they have more meetings, which improves the company's governance (Jensen, 1993; Lipton & Lorsch, 1992) resulting in better control and monitoring of managers' activities (Abbott et al., 2004; He et al., 2009; Lipton & Lorsch, 1992). On the other hand, Uzun et al. (2004) and Bedard, Chtourou and Courteau (2004) found that the frequency of board meetings does not necessarily lead to effective monitoring of the management. Generally, when a company is charged with fraud, the credibility of the directors will be scared is not much, a little. This will tarnish their credibility as a result their marketability. Having to secure their own interest (protecting their credibility in the market – agency theory), when there is problem with the company financial report, they will sit together for a meeting more often than they usually do. As there are arguments for both a positive and a negative impact of board meeting frequency, this study tests the following null hypothesis:

H3a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the frequency of board meetings.

H3b: There is no significant relationship between the frequency of board meetings and the likelihood of corporate fraud.

iv. Directors' shareholding (DIROWN)

This variable refers to the percentage of company shares owned by the directors. Directors having a large interest in a company would decrease the problem of agency cost (Jensen, 1993) and the managers will not put the company at risk of fraud; therefore, there will be a reduction in the likelihood of corporate fraud. On the other hand, Loebbecke, Eining and Willingham (1989) note that having a significant ownership in a company is a motivational factor of fraud. Summers and Sweeney (1998) investigated the relationship between insider trading and fraud, and found that managers, i.e. insiders, will reduce their shareholdings in the event of fraud.

It is important to examine this factor in the Malaysian context due to the composition of ownership seen in the country. Zhuang et al. (2001) indicate that family shareholders are the largest shareholders in Malaysian companies as many of the companies started as family-owned companies then went public. Most East Asian companies are controlled by family owners (La Porta et al., 1999), which means the managers come from families that hold many shares in the companies. The institutional theory and agency theory are both have role in this variable. In the view of agency theory, acting on their self-interest, holding a larger shareholding the directors will carry out their duty to the very best they can to ensure the company will not fall into any problem as they have to protect their interest. Within the boundaries of institutional theory, high family concentrated ownership in Malaysia companies influences the business structure and the appointment of directors. Having owners as the director could have impacted on the effectiveness of company governance. This study will examine the relationship between managerial ownership and the likelihood of corporate fraud. As the arguments from past research on this relationship indicate both negative and positive relationships, this study tests the null hypothesis as follows:

H4a: There is no significant difference between fraudulent and non-fraudulent companies with respect to managerial ownership.

H4b: There is no significant relationship between managerial ownership and the likelihood of corporate fraud.

v. Chairman's duality (DUALITY)

CEO duality is when the CEO is also the chairman of the board (Che Haat et al., 2008; Haniffa & Cooke, 2002). Past research has established that the effectiveness of monitoring of management activities is reduced when a company has a duel CEO (Fizel & Louie, 1990; Lorsch & Maclver, 1989). Blackburn (1994) argues that the board of directors should be able to discuss company matters independently, without the CEO/chairman present, so they can effectively monitor the CEO's plans. Therefore, it is important to separate company CEO and chairman of the board. However, Rechner and Dalton (1991) found that CEO duality can benefit companies as management's compensation is based on company performance and therefore the CEO could carry out the company's strategic planning to increase performance without much interference from the board. This is because the CEO, as chairman, will have the power to defend the company's strategies and actions). As there are arguments that CEO duality has both positive and negative relationships with the effectiveness of company governance, this study tests the null hypothesis as follows:

H5a: There is no significant difference between fraudulent and non-fraudulent companies with respect to duality.

H5b: There is no significant relationship between duality and the likelihood of corporate fraud.

vi. Tenure of board's chairman (TENURE)

Tenure of board chairman refers to the period of time the board's chairman has been on the board. Past research has found that the tenure of the CEO, who, in many cases, is also the company's chairman, does have an influence on the board's decision making (Hill & Phan, 1991; Mace, 1986; Patton & Baker, 1987; Vancil, 1987). This variable will be tested to determine whether the board chairman's tenure has any effect on the effectiveness of the board's monitoring and control. There have not been many studies on chairman's tenure in relation to corporate fraud, and, as in most cases the chairman is also the CEO, studies on CEO tenure will be used as the basis of discussion in this study. Hill and Phan (1991) found that the longer the CEO is on the board the more influence they have over the decision-making process of the board. Mace

(1986), Patton and Baker (1987), and Vancil (1987) state that even though there is a nominating committee on the board, the CEO has the strongest influence over board selection and therefore has the power to control the board. An established CEO who has been on the board for a long time will be more able to dominate the board as compared to a new CEO (Hermalin, 2005; Hermalin & Weisbach, 1988). Daboub, Rasheed, Priem and Gray (1995) found that the longer the tenure, the less likely fraud is to be committed. Thus, this study tests the null hypothesis as below:

H6a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the tenure of the board's chairman.

H6b: There is no significant relationship between the tenure of the board's chairman and the likelihood of corporate fraud.

vii. Ethnicity of the board's chairman (ETHNIC)

Every ethnicity has its own unique culture, and as Malaysia's main ethnicity is Malay, this study will look at the differences between Malay chairmen and those from other ethnicities with respect to corporate fraud. Studies on culture have found that differences in cultural practices have various influences over business practices, organizational structures, managerial styles, accounting disclosure practices, auditing services and governance structures (Claessens et al., 2000; Haniffa & Cooke, 2002; Hofstede, 1980; Yatim et al., 2006).

Malaysia's capital market shows clear segmentation based on ethnicity. There is a clear distinction between the Malays and the Chinese (Jesudason, 1989). Malaysian listed companies' boards and shares are predominantly controlled by Malays and Chinese (Yatim et al., 2004). In this country the cultural differences between Chinese and Malays have significant influence over managerial styles. Chinese have been found to be more secretive in their disclosures, while Malays are more transparent, which could be because of their religious beliefs (Haniffa & Cooke, 2002). The results found by Haniffa and Cooke (2002) are in contrast with Hofstede and Gray's hypothesis,[8] which posits that Malays are less transparent and more secretive. Therefore, this study will examine whether there is any difference between fraudulent and

[8] Refer to Haniffa and Cooke's (2002) cultural characteristics, Table 1, p. 325.

non-fraudulent companies‘ board chairmen‘s ethnicities and their relationship to the likelihood of corporate fraud. Thus, the following null hypothesis is tested:

H7a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the ethnicity of the board‘s chairman.

H7b: There is no significant relationship between the ethnicity of the board‘s chairman and the likelihood of corporate fraud.

viii. Independence of the audit committee (INDAC)

This variable refers to audit committee directors who are not employees of the companies or their subsidiaries; they are also known as outside directors. Studies have found that there is a negative association between independent audit committees and earnings management activities and the likelihood of fraud in companies (Abbott, Parker & Peters, 2002; Klein, 2002). The Malaysian Code of Corporate Governance (2001) best practices require audit committees to have a majority of independent members for the committee to be effective in monitoring the company‘s financial affairs. This is consistent with Klein (2002), who found a negative relationship between earnings management and the percentage of independent audit committee members. A similar result is presented by Abbot, Park and Parker (2002), whose study indicates that there is a negative association between independent audit committee members and the likelihood of corporate fraud. This study examines the differences in the percentage of independent audit committee members between non-fraudulent companies and fraudulent companies and its relationship with the likelihood of corporate fraud; thus, the following null hypothesis is tested:

H8a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the percentage of independent audit committee members.

H8b: There is no significant relationship between the percentage of independent audit committee members and the likelihood of corporate fraud.

ix. Outside directorships held by the audit committee (OUTDIR)

This refers to the proportion of directors on the board holding at least one additional directorship in another company to the total number of directors on the audit committee (consistent with the definition by Haniffa & Hudaib, 2006). Audit committee is responsible for overseeing the company's financial affairs. This takes a lot of time as there is copious financial information to digest and financial matters can be complicated. The number of outside directorships has been found to have a significant relationship with the effectiveness of audit committees in monitoring companies' financial affairs (Tanyi and Smith, 2015; Sharma and Iselin, 2012; Ahn et al., 2010; Ferris et al., 2003; Bédard et al., 2004; Haniffa & Hudaib, 2006; Morck et al., 1988; Fama, 1980; Beasley, 1996). Fama (1980) states that the incentive for outside director to carry out effective monitoring of managers' activities comes from the market for outside director. Being a director of a reputable, well-performing company reflects on the director's ability to be effective and therefore signals value to the external market, which rewards them with additional directorships. In the view of agency theory, directors will try to maximize their own value for their own interest which in respect to this variable, holding more directorship increase their value in the market therefore directors will carry out their duties effectively.

However, monitoring top management is time consuming and requires much effort (Bédard et al., 2004; Morck et al., 1988); therefore, when one is trying to carry out the duties of an audit committee member effectively, holding more directorships will not help (Bédard et al., 2004). Beasley (1996) states that director that holds two or more outside directorships reduce the effectiveness of their roles, thus increasing the risk of fraudulent financial reporting. The same conclusion was found by Tanyi and Smith (2015) and Sharman & Iselin (2012) that having multiple directorships reduces the effectiveness in monitoring. The study on the role and effectiveness of governance by audit committee with multiple directorships is divided to two schools of thought. On one hand, being busy by holding more directorships increases the effectiveness of monitoring as the directors have more knowledge and experience that they bring with them from directorships. On the other hand, being busy decrease the ability of monitoring by these directors. It is important to study this

characteristic to understand the effectiveness of having multiple directorships in Malaysia setting.

Thus, this study will examine the differences in the percentage of audit committee members holding more than one outside directorships between non-fraudulent companies and fraudulent companies and this factor's relationship with the likelihood of corporate fraud. Therefore, the following null hypothesis is tested:

H9a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the percentage of audit committee members holding one or more additional outside directorship.

H9b: There is no significant relationship between the percentage of audit committee members holding one or more additional outside directorship and the likelihood of corporate fraud.

x. Frequency/number of audit committee meeting in a year (ACMEET)

This variable refers to the number of meetings held by the audit committee in a year. Consistent with the need to analyse the frequency of board meetings, the frequency of audit committee meetings will also be studied as audit committees are responsible for monitoring financial reporting, which is an important source of information for users. Consistent with the argument for frequent board meetings, the audit committee is more effective at monitoring when they have more meetings, and this will improve the company's governance (Abbott et al., 2004; He et al., 2009; Jensen, 1993; Lipton & Lorsch, 1992; Uzun et al., 2004). As audit committees are responsible for monitoring financial affairs and they have the expertise to analyse and understand the process of preparing financial reports, they should be able to highlight any irregularities in the company's financial reports. Thus, the below null hypothesis is tested:

H10a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the frequency of audit committee meetings.

H10b: There is no significant relationship between the frequency of audit committee meetings and the likelihood of corporate fraud.

xi. Institutional shareholding/blockholder shares ownership (BLOCK)

In the view of institutional theory, the differences in institutional setting have influence over the company's governance framework. With a high concentration of family ownership in many companies, the existences of institutional shareholders could increase the governance of company. A large blockholder ownership has been found to be effective in monitoring and influencing companies' corporate governance practices (Burns, 2003; Gilson, 1990; Shleifer & Vishny, 1986). Therefore, this study will analyse the percentage of blockholder ownership in both groups of companies. Institutional shareholding or independent blockholder stock ownership is defined as outside stockholders holding at least five per cent of companies' common shares (Beasley, 1996). Gilson (1990) and Burns (2003) report that large blockholders are able to monitor effectively and can influence companies' corporate governance practices to reduce the likelihood of fraud. Shleifer and Vishny (1986) found a similar result that confirms block ownership by institutional shareholders is more effective in controlling managers from pursuing their own interests than individual shareholders. This study will examine the differences in the percentage or proportion of blockholder stock ownership between non-fraudulent companies and fraudulent ones, as well as its relations with the likelihood of corporate fraud. Thus, the following hypothesis is tested:

H11a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the percentage of institutional shareholding (blockholder share ownership).

H11b: There is no significant relationship between the percentage of institutional shareholdings (blockholder share ownership) and the likelihood of corporate fraud.

4.2.2 Earnings management variables and hypotheses

Within the framework of agency theory and institutional theory, earnings management is committed by managers in order to present a positive look on company‘s financial performance which reflects back to managers‘ performance (Jin Kim and Suk Yoon, 2016). A good governance reduces the earnings management committed by managers (Earnings management is a ‗deliberate action taken by the management to meet earnings objectives‘ (Arens et al., 2007, p. 342). Beneish (1999a, p. 24) defines earnings manipulation as ‗an instance in which the company‘s managers violate generally accepted accounting principles to favourably represent the company‘s financial performance‘. This definition shows that managing earnings within GAAP principles is not fraud. However, managing earnings beyond the scope of GAAP is an act of fraud. Given the opportunity to manage earnings and a lack of governance and control, fraudulent financial reporting can easily occur (Beasley et al., 1999).

Dechow et al. (1995) state that the analysis of earnings management often focuses on the management‘s use of discretionary accruals. However, there is no systematic evidence on the relative performance of alternative models based on discretionary accruals at detecting earnings management. The most common model for detecting earnings management by measuring discretionary accruals are the Healy Model, DeAngelo Model, Jones Model, Modified Jones Model and the Industry Model (Dechow et al., 1995).

The Healy Model tests earnings management by comparing mean total accruals scaled by lagged total assets across the earnings management partitioning variable. The De Angelo Model tests earnings management by computing the first differences in total accruals and by assuming that the first differences have an expected value of zero under the null hypothesis of no earnings management. The Jones Model relaxes the assumption that nondiscretionary accruals are constant and attempts to control the effect of changes in a firm‘s economic circumstances on nondiscretionary accruals. The Modified Jones Model is designed to eliminate the conjecture tendency of the Jones Model to measure discretionary accruals with error when discretions are exercised over revenues. The Industry Model is similar to the Jones Model except that instead of attempting to directly model the determinant of nondiscretionary accruals, it assumes that variations in the determinants of nondiscretionary accruals are

common across firms in the same industry. The most common starting point for the measurement of discretionary accruals is total accruals. A particular model is then assumed for the process, generating the nondiscretionary component of total accruals and enabling total accruals to be decomposed into discretionary and nondiscretionary components. Most of the models require at least one parameter to be estimated, and this is typically implemented through the use of an ‗estimation period' during which no systematic earnings management is predicted (Dechow et al., 1995).

Dechow et al. (1995)[9] studied the five aforementioned earnings management models and suggest that all of the models are reasonably well-specified tests for a random sample of firms' years, but the power of the tests is low when there is an economically plausible magnitude. However they indicate that out of the five models tested, the Modified Jones Model is the most powerful in detecting earnings management. However, the study recommends further research on developing models that could be powerful tests for detecting earnings management, as all of the five models' ability to detect earnings management of an economically plausible magnitude is relatively low.

Studies on earnings management and its relation to fraud have mostly focused on analysing companies' accruals (Dechow et al., 1995, 1996; Den Adel, 2005; Ebrahim, 2007; Hasnan et al., 2008; Jordan, Clark & Pate, 2008). As the most common techniques used in fraudulent financial reporting are improper recognition of revenue and overstatement of assets (Treadway Commission, 1999), it can be seen that financial variables other than accruals should also be considered. Beneish (1999a), Grove and Basilico (2008), and Rosner (2003) all conducted analyses on earnings management that included other financial indexes/ratios as well as accruals. Beneish (1999a) conducted a study on detecting earnings manipulation and then used the sample of earnings manipulators to develop a model for detecting earnings manipulation using published financial information. Grove and Basilico (2008) examined fraud using the earnings management variables and model developed by Beneish (1999a). Rosner (2003) analysed earnings management/manipulation in failing firms using accruals and other financial indexes/ratios (profitability ratios, leverage) as proxies for earnings management.

[9] Refer to Appendix 1 for the discussion of the five models by Dechow et al. (1995).

In developing the earnings management hypotheses, this study did not only examine companies' accruals, but also other financial indexes/ratios over a five-year period (the first year of fraud and four years prior to it). The reason for not studying the discretionary accruals is that the main objective of this study is to analyse the ability of published information to indicate if a company is at risk of fraud; therefore, the indexes used contained companies' published financial data that could easily be extracted and understood by general users. A total of 10 earnings management variables were selected for this study, as explained later in this chapter. Eight out of the 10 earnings management variables were also analysed by Beneish (1999a), and two were used by Rosner (2003). However, the sales, general and administrative expenses indexes (which were studied by Beneish, 1999) had to be dropped from this study as many Malaysian listed companies did not report this figure in their profit and loss statement. As a result of the requirement for reporting under FRS 101, the figure is very low, which means that the sales, general and administrative expenses figures are not mandatorily reported or disclosed. Therefore, this study only analyses nine variables in total, of which seven are consistent with Beniesh and two (inventories ratio and inventories growth over sales growth ratio) with Rosner (2003).

These variables are appropriate for this study given its main objective, which is to analyse the ability of companies' published information to indicate if a company is at-risk of fraud, where the financial information can be easily obtained. Definition and measurement of earnings management for this study referred to Beneish (1999) and Rosner (2003), as both studies assess earnings manipulation by fraudulent companies, which is more appropriate for this study. The nine earnings management variables are:

i. Days' sales in receivables index
ii. Gross margin index
iii. Asset quality index
iv. Sales growth index
v. Total accruals to total assets index
vi. Depreciation index
vii. Leverage index
viii. Inventories ratio
ix. Inventories growth over sales growth ratio

Development of earnings management variables' hypotheses

For each of the variables, the index will be calculated for both groups of companies and the results will be compared. The developments of the 10 financial hypotheses are (for all the formulas in index calculation, *t* is the fraud year and *t-1* is the year prior to the fraud year, the same formula is applied to all five years analysed):

i. Days' sales in receivables index (DSRI)

$$\textbf{DSRI} = \frac{\text{Re}ceivables_t / Sales_t}{\text{Re}ceivables_{t-1} / Sales_{t-1}}$$

Day's sales in receivable index (DSRI) is the ratio of days' sales in receivables in the first year in which earnings manipulation was uncovered (year *t*) over the ratio of days' sales in receivables in the year prior to which earnings manipulation was uncovered [year (*t – 1*)] (Beneish, 1999a). Beneish argues that a large increase in days' sales in receivables could be the result of a change in credit policy to increase sales in the face of increased competition, but disproportionate increases in receivables relative to sales could also suggest revenue inflation. Thus, he expects a large increase in the DSRI to be associated with a higher likelihood that revenues and earnings were overstated. Wells (2001) states that a material increases in the days' sales in receivables index could indicate that a company's receivables are not true. A sudden change in the amount of sales from one year to the next could be because of changes in credit policy (to increase sales to compete) or because of a decrease in revenue (Beneish, 1999a). Therefore, a large increase in receivables may be associated with a higher likelihood of earnings being overstated. This study tests the null hypothesis as follows:

H12a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the days' sales receivable index.

H12b: There is no significant relationship between a company's days' receivable index and the likelihood of corporate fraud.

ii. Gross margin index (GMI)

$$\textbf{GMI} = \frac{(Sales_{t-1} - COGS_{t-1}) / Sales_{t-1}}{(Sales_t - COGS_t) / Sales_t}$$

Where:

COGS = cost of goods sold

Gross margin index (GMI) is calculated as the ratio of the gross margin in year (*t - 1*) to the ratio of the gross margin in year (*t*) (Beneish, 1999a). Beneish states that companies with poorer prospects are more likely to engage in earnings manipulation and expects a positive relationship between GMI and the probability of earnings manipulation. Wells (2001) argues that when there is a gross margin decrease from one year to the next, there is a higher risk that management will engage in fraud to offset the declining gross margin. A decrease in a company's gross margin indicates a decrease in the company's performance, which sends a negative signal regarding companies' prospects (Lev & Thiagarajan, 1993). A GMI of greater than one means that the gross margin decreased (Beneish, 1999a). Therefore, a large decrease in GMI means a company's performance is deteriorating, and a poorly performing company is more likely to manage earnings (Christie & Zimmerman, 1994; Smith et al., 2001). This study will examine the differences in GMI of non-fraudulent companies and fraudulent companies. Thus, the null hypothesis below is tested:

H13a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the gross margin index.

H13b: There is no significant relationship between a company's gross margin index and the likelihood of corporate fraud.

iii. Asset quality index (AQI)

$$\textbf{AQI} = \frac{1-[(CA_t + PPE_t) / TA_t]}{1-[(CA_{t-1} + PPE_{t-1}) / TA_{t-1}]}$$

Where:

CA = current assets

PPE = plant, property and equipment.

TA = total assets

Asset quality index (AQI) is the ratio of noncurrent assets other than property, plant and equipment (PP&E) to total assets and measures the proportion of total assets for which future benefits are potentially less certain (Beneish, 1999a). The AQI is the ratio of asset quality in year *t* to asset quality in year (*t – 1*). Beneish states that an increase in asset realization risk indicates an increased propensity to capitalize, and therefore defer, costs. Thus, he expects to find a positive relationship between the AQI and the probability of earnings manipulation. Wells (2001) states that an increase in the amount of intangible assets or AQI may indicate that in a declining performance period, companies would capitalize costs into intangible assets. An increase in the AQI indicates an increase in capitalization. Siegel (1991) suggests AQI is a measure of changes in asset realization risk, which means the company has the tendency to capitalize cost. Thus, this study tests the following null hypothesis:

H14a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the assets quality index.

H14b: There is no significant relationship between a company's assets quality index and the likelihood of corporate fraud.

iv. Sales growth index (SGI)

$$\textbf{SGI} = \frac{Sales_t}{Sales_{t-1}}$$

The sales growth index (SGI) is the ratio of sales in year *t* to sales in year (*t – 1*) (Beneish, 1999a). An increase in the SGI indicates an increase in sales, though this may not be true. The United States National Commission on Fraudulent Financial Reporting 1987 and the National Association of Certified Fraud Examiners 1993 (as cited in Beneish, 1999) state that growth does not imply manipulation, but growing companies are viewed by professionals as more likely than other companies to commit financial statement fraud, because their financial positions and capital needs put pressure on managers to achieve earnings targets. Motives to manipulate earnings can be put into three categories: personal gain, continuation of investor/supplier support and satisfying contractual arrangements (Lev, 2003). The pressure to ensure company growth is therefore a big issue to management as the performance of managers is based on company performance. Managers manipulate earnings for their own benefit (Leuz et al., 2003). Skinner and Sloan (2000) found a positive earnings

management relationship with company growth. Therefore, the higher the SGI, the more likely the company is to manipulate earnings. This study tests the following hypothesis:

H15a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the sales growth index.

H15b: There is no significant relationship between a company's sales growth index and the likelihood of corporate fraud.

v. Total accruals to total assets index (TATA)

$$\textbf{TATA} = (\Delta CA_t - \Delta Cash_t - \Delta CL_t - \Delta \textit{Current Maturities of LTD}_t - \Delta \textit{Income Tax Payable}_t - \textit{Depreciation and amortization}_t) / \textit{Total assets}_t$$

Where:

CA = current assets

CL = current liabilities

LTD = long-term debt

Total accruals (TATA) are calculated as the change in working capital accounts other than cash less depreciation (Beneish, 1999a). Beneish expects higher positive accruals (less cash) to be associated with a higher likelihood of earnings manipulation. Wells (2001) states that an increase in the TATA indicates larger accruals and less cash, which are associated with a higher risk of earnings manipulation. Many studies have used discretionary accruals for the assessment of earnings management; for instance, Healy (1985), Jones (1991) and Ebrahim (2007). Higher positive accruals (less cash) are associated with a higher likelihood of earnings manipulation (Beneish, 1999a). This study will examine the differences in TATA between non-fraudulent companies and fraudulent companies. The below null hypothesis is tested:

H16a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the total accruals to total assets index.

H16b: There is no significant relationship between a company's total accruals to total assets index and the likelihood of corporate fraud.

vi. Depreciation index (DEPI)

$$\textbf{DEPI} = \frac{Depreciation_{t-1}/(Depreciation_{t-1} + PPE_{t-1})}{Depreciation_{t}/(Depreciation_{t} + PPE_{t})}$$

Depreciation index (DEPI) is calculated as the ratio of the rate of depreciation in year *t-1* over the ratio of the rate of depreciation in year *t*. Beneish (1999) states that a DEPI greater than 1 indicates that the depreciation rate of assets has been slowed and raises the possibility that companies have adopted income-increasing methods by revising the assets' estimated useful life upward. Therefore, we can expect fraudulent companies to show a DEPI of greater than 1 if income increasing related to depreciation is not a common practice among Malaysian companies. Thus, this null hypothesis is tested:

H17a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the depreciation index.

H17b: There is no significant relationship between a company's depreciation index and the likelihood of corporate fraud.

vii. Leverage index (LVI)

$$\textbf{LVI} = \frac{(LTD_{1} + CurrentLiabilities_{t})/TotalAssets_{t}}{(LTD_{t-1} + CurrentLiabilities_{t-1})/TotalAssets_{t-1}}$$

Where LTD = long-term debt

Leverage index (LVI) is calculated as the ratio of total debt to total assets in year *t* over year *t-1*. A LVI greater than 1 indicates an increase in leverage. Beneish (1999) indicates that LVI is used to capture incentives in debt covenants for earnings manipulation. The author states that the inclusion of LVI is done _to capture incentives in debt covenants for earnings manipulation' (p. 28). An LVI more than 1 means that there is an increase in leverage. It will be interesting to see the differences between the two groups of companies with respect to LVI, to examine whether fraudulent companies manipulate income through leverage and also to analyse the relationship of this index with the likelihood of corporate fraud. Thus, the following null hypothesis is tested:

H18a: There is no significant difference between fraudulent and non-fraudulent companies with respect to leverage index.

H18b: There is no significant relationship between a company's leverage index and the likelihood of corporate fraud.

viii. Inventories ratio (INVR)

INVR = $(Inventory_{t} - Inventory_{t-1})/Total\ Assets_{t-1}$

The inventories ratio (INVR) is calculated as the change in inventory as a percentage of beginning-of-year assets (Rosner, 2003). One of the common techniques used in fraudulent financial reporting is overstatement of assets and improper revenue recognition. Testing this variable is appropriate as there is a tendency for companies to inflate or deflate the value of their inventories by changing the recording method (LIFO, FIFO or weighted average). Inventory (apart from receivables) is the most frequently manipulated financial information (Asare & Davidson, 1995; Beasley et al., 1999; Schilit, 1993). The COSO study conducted by Beasley (1999) indicates that the most common misstatement of assets relates to receivables and inventories. Therefore, this study analyses the INVR to look at whether there is any difference between fraudulent companies and non-fraudulent companies' practices, as well as the index's relationship with the likelihood of corporate fraud. Thus, the below null hypothesis is tested:

H19a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the inventories ratio.

H19b: There is no significant relationship between a company's inventories ratio and the likelihood of corporate fraud.

ix. Inventories growth over sales growth ratio (INVSR)

$$\textbf{INVSR} = \frac{Inventory_{t} - (Inventory_{t-1} / Inventory_{t-1})}{Sales_{t} - (Sales_{t-1} / Sales_{t-1})}$$

The inventories growth over sales growth ratio (INVSR) is calculated as the difference in growth between inventory and sales (Rosner, 2003). If the ratio is positive, it means that inventory is growing at a faster rate than sales, which is considered to be a potential signal of fraud (Schilit, 1993). In assessing the differences in the INVSR, the above formula is used. It is calculated as the difference in growth

between inventory and sales (Rosner, 2003). This study tests the following hypothesis:

H20a: There is no significant difference between fraudulent and non-fraudulent companies with respect to the inventories growth over sales growth ratio.

H20b: There is no significant relationship between a company's inventories growth over sales growth ratio and the likelihood of corporate fraud.

For the purposes of calculating the indices and ratios, year (*t*) is the year studied and year (*t – 1*) is the year prior to the year studied. For example, if this study set the first year of fraud as 2003, then the financial information needed to calculate the indices and ratios would come from 2003 a year (*t*) and 2002 as year (*t-1*). The same formula of calculation for the earnings management indices and ratios is applied for all five years analysed. The calculation of the indices was carried out for each of the companies in both groups (fraudulent and non-fraudulent). This gives a general view of earnings manipulation according to each index for each company. The result answer question one of this study and provides a descriptive analysis for both sample groups.

Further analyses were carried out using the information obtained from the descriptive analysis. For each group, the mean, median and t-test results for earnings management variables were examined to look for differences between fraudulent and non-fraudulent companies' practices. This answers research question number two. To determine the significant variables that could indicate that a company is manipulating earnings, which will answer question three, logistic regression analysis was performed on all nine earnings management variables, consistent with Beneish (1999) and Grove and Basilico (2008). The regression models are explained in section 5.5.2 under research methodology.

Both the non-financial (corporate governance) and financial (earnings management) variables were analysed for each of the companies in the fraudulent and non-fraudulent groups. This established the corporate governance and earnings management practices for both groups of companies. There are two sets of time frame for data in this study. For corporate governance characteristics this study investigated two years' worth of data; that is, the first year of fraud (year *t*) and the year prior to the first year of fraud year *t-1*). Meanwhile, for the earnings management variables,

this study extended the period of study to five years: the first year of fraud (year *t*) to four years prior to the first year of fraud (year *t-1*, year *t-2*, year *t-3* and year *t-4*). The first year of fraud (year *t*) for both sets of data is same year (the year when the company was charged with fraud by the Malaysia Securities Commission).

The corporate governance and earnings management practices of fraudulent and non-fraudulent companies were compared to determine any significant differences between them. The results of this analysis will highlight the significant differences between non-fraudulent and fraudulent companies' earnings management and corporate governance practices, thereby answering research questions one and three. To determine the significant relationships between the variables and corporate fraud, further analyses will be carried out on the variables using logistic regression analysis; this will answer questions two and four.

4.3 Summary

This chapter explained the research framework and the selection of variables. The variables were chosen based on the significant relationship between them and the incidences of fraud, which was found in the literature. The chapter further described the development of the 20 hypotheses for this study, of which 11 are hypotheses on corporate governance characteristics and 9 focus on earnings management variables. Explanations of the formulae used in calculating all the earnings management variables were also described. The methodology for data collection, sampling procedures and data analysis will be covered in the following chapter.

Chapter 5
Research Methodology

This chapter describes the research setting and design procedures in detail. This research adopts the positivism approach. Positivism is ~~"a~~n approach to social research that seeks to apply the natural science model of research to investigations of social phenomena and explanations of the social world" (Denscombe, 2002, p.27). The approach study of positivism involves deductive study which hypothesis testing is one of its main principles. By testing the hypothesis, explanation and generalisation of result can be developed and examined. This offers objectivity and can be control scientifically (Bryman, 2008).

After a brief discussion on the research approach, the chapter continues with the explanation on the sampling method used, including the criteria for the companies selected as well as the size of the sample. Next, the time period for data collection and how the data were collected are described. The final part discusses the statistical analysis used for this study, including the models used in testing the hypotheses. As stated in chapter one, the objective of this study is to analyse the usefulness of corporate-published information in indicating if a company is at risk of corporate fraud in Malaysia. Therefore, this study analyses corporate governance characteristics and earnings management variables for two groups of companies (fraudulent and non-fraudulent). The research setting is discussed in the following sections.

5.1 Sample

As the objective of this study is to determine the usefulness of corporate-published information in indicating if a company is at risk of fraud, the determination or selection of fraudulent companies and non-fraudulent companies was very important. The selection of both groups of companies was made based on the specific criteria explained for each group. The general criteria for both groups of companies are as follows:

i. Companies were selected from public listed companies in Bursa Malaysia as these companies are required to publish annual reports and therefore

information can be accessed by external users of business information and market participants.

ii. Banking, finance, insurance and unit trust companies were excluded from the selection as these companies, apart from being subjected to certain regulations and requirements as other companies in other industries, are also subjected to additional statutory requirements, namely the Banking and Finance Act 1989, as well as banking and finance regulations.

iii. All companies for both groups needed a complete set of data for each year analysed; therefore, companies with incomplete data were excluded.

Once the general criteria for both groups of companies were established, the selection of each sample was carried out according to the specific criteria explained in the following section.

5.1.1 Sample of fraudulent companies

It is difficult to determine a fraudulent company due to the secretive nature of fraud. Companies are reluctant to publicize any fraudulent activities that took place within their organization. Past research carried out in the US (e.g. Beasley, 1996; Beasley et al. 1999; Cook & Grove, 2004; Cullinan & Suttom, 2002; Deachow et al., 1996; Pearson, 2005; Rosner, 2003) used a sample of fraudulent companies obtained from the Securities Commission Accounting and Auditing Enforcement Release. Therefore, consistent with past studies, this study uses fraudulent companies listed in the Malaysian Securities Commission Enforcement Release for the period 2003 to 2007. As one of the important groups of variables analysed in this study is corporate governance characteristics, the starting time period for selecting the fraudulent companies was one year after the Malaysian Code of Corporate Governance was made mandatory to all listed companies. The Malaysian Code of Corporate Governance was established and made mandatory in March 2000. The reason for starting the selection in 2003 was that since the Malaysian Code of Corporate Governance was introduced in 2000, the year 2001 was considered an adjustment period for companies to adapt to the new requirements. Thus, the year 2002 was seen as appropriate as the starting year for data collection, and since the data on corporate governance for this study cover two years (the fraud year and the year prior to the

fraud year), the selection of fraudulent companies started from 2003. The Code was revised on 1st October, 2007, and in 2008 the global recession began to take effect; therefore, the cut-off period for the selection of fraudulent companies for this study was 2007.

The Malaysian Securities Commission is responsible for ensuring that all companies that are subjected to the Malaysian Companies Act, Malaysian Securities Act and Bursa Malaysia listing rules and regulations do not breach any of the requirements. The MSC Enforcement Release deals with a wide range of offences, from share trading licences to fraudulent financial reporting. For the purpose of this study only those listed companies that were charged with accounting and auditing fraud, were listed in the Securities Commission Enforcement Release, were selected as fraudulent companies.

5.1.2 Criteria for non-fraudulent companies

The non-fraudulent companies that are the control companies in this research were selected from public listed companies on Bursa Malaysia. The companies were selected based on their similarity to the fraudulent companies in time period, industry type and size. It was important to make sure that the comparison between fraudulent companies and non-fraudulent companies is based on the similarity in the likelihood of financial statement fraud occurrence (Beasley, 1996) by selecting samples that met these three important criteria. Each fraudulent company was matched with the non-fraudulent companies based on the following criteria:

i. ***Industry***: non-fraudulent companies were selected from the same industry as the fraudulent ones.

ii. ***Time period***: the first year of fraud, year (t) for non-fraudulent companies, was determined by the fraudulent companies‘ first year of fraud.

iii. ***Company size***: the non-fraudulent companies were selected based on their similarity in size to the fraudulent companies. There are a number of ways to measure a company‘s size, such as through total assets, market valuation and market capitalisation; this study used total assets as the size measurement.

For the non-fraudulent company sample, the whole population was selected by excluding those with the following criteria:

i. The companies must not have any record of being investigated for commercial crime either by the Securities Commission or any other regulatory bodies.

ii. The non-fraudulent companies must not be in financial distress (not listed in the PN4[10] or PN17[11] listing). Distressed companies were excluded because of the statement made by Malaysian Securities Commission that many of the losses suffered by PN4 and PN17 companies are caused by mismanagement, fraud and other unethical practices (Anwar, 2006).

In the event that the whole population (in any industry) was too big, stratified random sampling was used for that particular industry. Stratified random sampling is the most efficient sampling design for assessing different information regarding various strata within a population, which are different in their parameters (Sekaran, 2005).

5.1.3 Sample size

In 2002, Bursa Malaysia had 868 companies (562 on main board, 294 on second board and 12 MESDAQ companies) listed on its stock exchange. Bursa Malaysia is categorized into three groups, namely: main board, second board and the Malaysian Exchange of Securities Dealing and Automated Quotation (MESDAQ).[12] The sample size for each group is:

i. Fraudulent companies: All companies that were charged with accounting and auditing fraud by the Malaysia Securities Commission (listed in the Securities Commission Enforcement Release) from 2003 to 2007.

ii. Non-fraudulent companies: All companies in each sector that met the criteria for non-fraudulent companies were selected. Roscoe's (1975) rule of thumb is that a sample size larger than 30 and smaller than 500 is appropriate for most research. Therefore, for any particular industries where the total number of companies was too big, stratified random sampling was used to select an appropriate number for the sample. The following formula was used:

[10] Practice Notes No. 4, also known as PN4 (PN4, 2001), are conditions where a company is facing financial difficulty (distress) and does not meet the Bursa Malaysia listing requirements. Such companies are also known as financially distressed companies.
[11] In 2005, PN4 was replaced by Practice Notes No. 17, widely known as PN17 (PN17, 2005) in dealing with financially distressed companies.
[12] MESDAQ was launched on 6 October, 1997 as a separate market mostly for technology based companies. It is part of Bursa Malaysia.

$$n = \frac{NZ^2 pq}{(N-1)e^2 + Z^2 pq}$$

Where:

n = Sample size

N = Population size

Z^2 = Standard confidence interval (set at 1.96)

e^2 = Tolerable error level

pq = Sample proportion variance estimate

5.1.4 Sample selected

In determining the fraud sample, the Malaysia Securities Commission Enforcement Release (MSCER) for the period 2003 to 2007 was first analysed by taking into account the sampling criteria discussed in sections 5.1.1, 5.1.2 and 5.1.3. For this study, only those companies that were found to have committed accounting and auditing offences were selected for the fraud sample. Apart from analysing the MSCER list, this study also cross-checked the list with the Bursa Malaysia and Malaysian Company Commission enforcement section, as well as press releases, to determine the fraudulent company sample.

The MSCER disclosed 84 fraud cases (from 2003 to 2007). Out of this total, 34 companies were involved and charged with accounting and auditing offences by the Malaysia Securities Commission. From the 34 companies, 13 are no longer trading (bankrupt or liquidated). A final sample of 11 companies was used for this study as the other 10 companies either did not have complete sets of data or were not public companies. Private companies are not required to publish annual reports and therefore were excluded from this study. Out of the 11 companies selected, 5 were charged in 2007, 2 in 2005, 1 in 2004 and 3 in 2003. None of the companies charged in 2006 were selected for this study as they did not meet the necessary criteria. The year when the company was charged and listed in the MSCER is referred to as the first year of fraud or year *t*.

The selection of non-fraudulent companies was based on the fraudulent companies. As explained earlier, the selection of non-fraudulent companies was bound to the criteria mentioned. Table 5-1 presents the distribution of the samples in terms of total

number of companies selected according to industry. A final sample of 149 non-fraudulent companies and 11 fraudulent companies was used for this study.

Table 5-1 Distribution of Non-Fraudulent and Fraudulent Companies by Industry

Industry	Non-fraudulent	Fraudulent	Total
Trading and services	35	3	38
Industrial product	48	2	50
Technology	5	1	6
Consumer product	21	2	23
Construction	32	1	33
Property	8	2	10
Total	149	11	160

The small number of fraudulent companies could be one of the limitations of this study. There are quite a number of opinions with respect to sample size. Roscoe (1975), as cited by Sekaran (2003) proposed that: 1) A sample size larger than 30 and smaller than 500 is appropriate for most research; 2) Where samples are divided into subsamples, a minimum of 30 for each sample is necessary; 3) For multivariate research, sample size should be several times more than the number or variables; and 4) For simple experimental research with tight experimental controls, e.g. matched pairs, successful research is possible with a sample as small as 10 to 20. Hart and Clark (1999) carried out a study exploring the effect of a small-sized sample on the behaviour of maximum likelihood estimators and found that the risk of making Type I errors does not change as the sample size decreases. However, the risk of making Type II errors increases when size decreases. A study by Bergtold, Yeager and Featherstone (2011) indicates that the effect of small-size bias depends on the type of model estimate, the nature of the data and inference conducted. They conclude that sample size (even though it is still important) is not a big issue when the objective of the study is to obtain meaningful and interpretable marginal effects. Sekaran (2003) states that the determination of sample size depends on the objective and nature of the study. The very strict criteria for selecting the fraudulent sample have caused this sample to be small. Caution has to be taken in determining a company that is proven to have committed fraud. This is to ensure valid fraudulent data are used. Having

about 32% of total fraudulent companies (11 out of 34), though small if compared with the total number of listed companies on Bursa Malaysia, is considered representative enough for Malaysia.

5.2 Data

The financial data required for this study are the earnings management variables, which can be obtained from the financial information in the company‘s financial statements. The non-financial data required are the corporate governance characteristics, which can be obtained from corporate governance reports, analyses of companies‘ shareholdings and director profiles. Therefore, the most appropriate method for data capture is content analysis. Financial data were also obtained from the Datastream system.

5.2.1 Corporate governance data

The corporate governance characteristics or variables were obtained from companies‘ corporate governance reports, director profiles and analyses of shareholdings. The corporate governance characteristics analysed in this study are divided into four areas. The first area is characteristics of the board of directors, namely: independence of board (INBOD), total number of board members (TBOD), number of board meetings (BODMEET) and percentage of director shareholdings in the company (DIROWN). The independence of the board of directors is measured as a percentage of the number of board members that are not employed by the companies or their subsidiaries over the total number of board members. The frequency of board meetings is measured by obtaining the total number of meetings during a year. Percentage of director shareholdings is measured by taking the total percentage of shareholdings owned by all of the directors. All of this information will be extracted from the companies‘ corporate governance and directors‘ reports.

The second area of corporate governance variables relates to the characteristics of the board‘s chairman, namely: duality (DUALITY), chairman‘s ethnicity (ETHNIC) and chairman‘s tenure (TENURE). Duality is measured by determining whether the board chairman is also the CEO of the same company. A dichotomous variable is used indicating 1 for companies that have the company‘s CEO as the board chairman and 0 indicating otherwise. The ethnicity of the board‘s chairman is measured as a

dichotomous variable where 1 indicates that the chairman is Malay and 0 otherwise. Even though Malaysia is a multi-ethnic country, the majority of the population are Malays, followed by Chinese, Indians and others. However, the major players in the Malaysian economy are Chinese and Malay; therefore, this study used a dichotomous variable to indicate Malay or non-Malay. The tenure of the board's chairman is measured by taking the number of years the chairman has sat on the board. These sets of information were gathered from director profiles and corporate governance reports.

The next corporate governance variables are the audit committee characteristics. Three characteristics of audit committees were selected for this study. They are: the independence of the audit committee members (INDAC), the proportion of audit committee members having at least one additional directorship in another company to total number of audit committee member (OUTDIR) and the frequency of audit committee meetings (ACMEET). Consistent with the definition and measurement used for the independence of board members, the independence of audit committee members is measured as a percentage of the number of audit committee members that are not employees of the company or its subsidiaries, over the total number of audit committee members. Outside directorships are measured by taking the number of audit committee members that hold directorships in other companies. The frequencies of audit committee meeting are measured by the number of meetings held by the audit committee members in a year. This information was extracted from audit committees' reports and director profiles.

The last area of corporate governance variables used in this study is the percentage of institutional shareholdings or blockholder stock ownership, which is measured by taking the total percentage of blockholders (institutional) that own more than 5% of shares in the company (direct shareholdings). This information was gathered from an analysis of the companies' top 30 shareholdings. Table 5-2 presents a summary of the operationalisation or measurement of the variables and the source from which the data were obtained. The table also indicates how each of the variables will be measured.

Table 5-2 Operationalisation of Corporate Governance Variables and the Sources of Information

Variables	**Acronym**	**Operationalisation/measurement of variables**	**Source of information**
Independence of board members	INBOD	The proportion of independent directors to total number of directors on the board (percentage).	Company annual reports, corporate governance reports and director profiles.
CEO/chairman duality	DUALITY	Dichotomous: 1 for dual role and 0 for otherwise.	Company annual reports, corporate governance reports and director profiles.
Tenure of board's chairman	TENURE	The number of years the board's chairman has held the post.	Company annual reports and director profiles.
Frequency of board meetings	BODMEET	The number of board meeting in a year.	Company annual reports and corporate governance reports.
Size of board/Total number of board members	TBOD	The total number of board members.	Company annual reports and corporate governance reports.
Chairman's ethnicity	ETHNIC	Dichotomous: 1 for Malay chairman and 0 for non-Malay.	Company annual reports and director profiles.
Directors' share ownership	DIROWN	Percentage of company shares retained or owned by the directors.	Company annual reports and director reports in financial statements.
Independence of audit committee members	INDAC	Proportion of independent audit committee members to total number of audit committee members.	Company annual reports and audit committee reports.
Outside directorships held by audit committee members	OUTDIR	The proportion of audit committee member having at least one additional directorship in another company to total number of members.	Company annual reports and director profiles.
Frequency of audit committee meetings	ACMEET	The number of audit committee meeting held in a year.	Company annual reports and audit committee reports.
Blockholders' stock ownership	BLOCK	Percentage of company's shares retained or owned by institutional shareholders (independent blockholders).	Company annual reports and an analysis of shareholdings.

5.2.2 Earnings management data

The earnings management data were gathered from the Datastream system and corporate financial statements. Two types of financial data not available in the Datastream system are tax payable and plant, and property and equipment, so these data were obtained from financial statements. Other financial data used for this study include receivables, sales, costs of sales, current assets, current liabilities, total assets, total cash and bank balances, depreciation and amortization, current maturity of long-term debt (the current portion of long-term debt or liabilities for the year), and inventories. The calculations for each of the ratios or indexes used for this study are presented in Table 5-3. The table also presents the variables‘ acronyms and the sources of data.

Table 5-3 Operationalisation of Earnings Management Variables and the Source of Information

Variable	Acronym	Operationalization/measurement of variable	Source of information
Days' sales in receivable index	DSRI	$\frac{\text{Re}ceivables_t / Sales_t}{\text{Re}ceivables_{t-1} / Sales_{t-1}}$	Datastream database and financial statements
Gross margin index	GMI	$\frac{(Sales_{t-1} - CostofGoodsSold_{t-1}) / Sales_{t-1}}{(Sales_t - CostofGoodsSold_t) / Sales_t}$	Datastream database and financial statements
Asset quality index	AQI	$\frac{1-(CurrentAssets_t + PPE_t) / TotalAssets_t}{1-(CurrentAssets_{t-1} + PPE_{t-1}) / TotalAssets_{t-1}}$	Datastream database and financial statements
Sales growth index	SGI	$\frac{Sales_t}{Sales_{t-1}}$	Datastream database and financial statements
Total accruals to total assets index	TATA	$(\Delta CurrentAssets_t - \Delta Cash_t - \Delta CurrentLiabilities_t - \Delta CurrentMaturitiesofLTD_t - \Delta IncomeTaxPayable_t - Depreciation\ and\ amortization_t) / Total\ assets_t$	Datastream database and financial statements
Depreciation index	DEPI	$\frac{Depreciation_{t-1} / (Depreciation_{t-1} + PPE_{t-1})}{Depreciation_t / (Depreciation_t + PPE_t)}$	Datastream database and financial statements
Leverage index	LVI	$\frac{(LTD_1 + CurrentLiabilities_t) / TotalAssets_t}{(LTD_{t-1} + CurrentLiabilities_{t-1}) / TotalAssets_{t-1}}$	Datastream database and financial statements
Inventory overstatement	INVR	$(Inventory_t - Inventory_{t-1}) / Total\ Assets_{t-1}$	Datastream database and financial Statements
Growth of inventory over sales	INVSR	$\frac{(Inventory_t - Inventory_{t-1}) / Inventory_{t-1}}{(Sales_t - Sales_{t-1}) / Sales_{t-1}}$	Datastream database and financial statements

Where PPE is the gross/net of property, plant and equipment for the year; LTD is long-term debt.

5.3 Reliability of Data Collection Procedure

It is vital for every study that uses content analysis to ensure that the data captured are reliable and valid, and this requires a reliable and valid data collection procedure (Krippendorff, 1980). It is therefore very important to be consistent with the measurement used for each variable. The definition and measurement for each variable was explained in the data collection section. To ensure the data are valid and reliable a second coder was appointed to extract the same corporate governance variables according to the definitions and measurements as explained. The second coder was someone familiar with Malaysian financial reporting and corporate governance reports. The second coder randomly selected a sample of companies' corporate governance reports and extracted data on the 11 characteristics chosen for this study. The second coder then compared the data collected with the data collected by the first coder to check if there was any discrepancy. Since the definitions and measurements for the corporate governance variables are clear, there was no discrepancy in either set of data extracted by the two coders. Data for earnings management variables were obtained directly from the Datastream system, except for tax payable and plant, property and equipment, which were extracted from financial statements. For the two types of data, the same second coder was assigned to extract the data and the same procedures were applied with this set of data as the corporate governance data.

5.4 Time Period for Data Collection

As it is difficult to determine exactly when fraud was committed, the fraud year is defined as the year in which the companies were charged for fraud or were listed in the Securities Enforcement Release. This is consistent with other studies conducted in this area (e.g. Beasley, 1999; Rosner, 2003). Therefore, data were collected for the first year of fraud (year *t)* and the year prior to the first year of fraud (year *t-1*). For non-fraudulent companies, the determinant of years (*t*) and (*t-1)* for data collection depends on the fraudulent sample's year. This definition of fraud year is applied to the earnings management time period for data collection as well.

There are two sets of time periods for data collection in this study. First is the time period for corporate governance data, which is two years: the first year of fraud and the year prior to the first year of fraud. For corporate governance variables, this study

analyses and compares the corporate governance characteristics for the first year of fraud for both groups as well as the year prior to the first year of fraud. Since the exact occurrence of fraud is not known, it is appropriate to analyse the year prior to the first year of fraud as well.

Second is the time period for the earnings management data, which is six years for five years of analysis. Therefore, data were analysed for year *t*, year *t-1*, year *t-2*, year *t-3* and year *t-4*. This enables us to see the trends in earnings management over the five years. Again, as the exact occurrences of earnings manipulation are not known, a trend analysis for the earnings management indices is significant for the study. The data for both groups were analysed to identify any significant differences between the groups' earnings management indices that could indicate if any of the companies are at risk of fraud.

5.5 Data Analysis

Data were analysed using Statistical Packages for Social Sciences version 17. The tests used were descriptive statistics, univariate analysis (nonparametric test), correlation analysis and logistic regression analysis.

5.5.1 Descriptive analysis

Descriptive analysis was carried out to answer research questions one. The corporate governance variables and earnings management variables of fraudulent and non-fraudulent companies were analysed to determine the corporate governance and earnings management practices of both samples for each year or specified period.

Before the data were analysed, their normality was tested using frequency tabulations. Bryman and Cramer (1990) indicate that frequency tabulations are usually the first step in statistical analysis used in summarizing data. By using frequency tabulations, variables are _cleaned-up'. This is where error can be detected and corrections can be made before further analyses are carried out. Norusis (1998) notes that if the data are not _deaned-up', all analysis conducted will be inaccurate.

When testing hypotheses, a particular statistical test is adopted and each statistical test has certain assumptions. These assumptions guide users in understanding the appropriateness of or reason to perform the statistical test and these assumptions must

be met in order to ensure accurate results (Morgan, Leech, Gloeckner & Barrett, 2007). Basically, there are two types of statistical test: parametric tests and nonparametric tests. The most common statistical test assumptions are: independence of observations, homogeneity of variance, normality and linearity. Parametric tests require all these assumptions to be met, in particular the normality assumption. For sets of data that do not meet or violate the normality and linearity assumptions, nonparametric tests are more appropriate. The normality test assumes that the distribution of the variables is approximately normally distributed, having most of the values in the middle range and a few in the lower or higher ranges (Morgan et al., 2007). Normality can be assessed by obtaining the skewness and kurtosis values as well as using the Kolmogorov-Smirnov (K-S) procedure (Pallant, 2007). A normality test was performed on both sets of data using the K-S procedure and the normal probability plot indicated that the data in this study are not normally distributed. However, when a sample is big, a lack of normality is common. With the not normally distributed data and corporate governance consisting of categorical and continuous data, as well as the sample being matched (non-fraudulent and fraudulent companies), it is appropriate to use a nonparametric (Chi-square, Mann-Whitney U or Wilcoxon) test for this study.

The corporate governance data comprise both categorical (dichotomous) and continuous data, while all the earnings management data are continuous. Descriptive analysis for continuous data is mean and median, while frequencies analysis is carried out for categorical data.

5.5.2 Inferential analysis

Univariate analysis was carried out to determine the differences in corporate governance characteristics and earnings management variables between the fraudulent and non-fraudulent companies. For continuous data the test was done through analysing the variables‘ means and medians using the Wilcoxon Sum Rank test and Mann-Whitney U test, which are both nonparametric tests. Nonparametric statistics are appropriate when the data is categorical or ordinal and when the data do not meet the parametric statistical assumptions (Pallant, 2007). The Wilcoxon Sum Rank test is designed for repeated measures of data either under two occasions or two different conditions to test the difference between the times studied. This is a nonparametric

alternative to the repeated measures t-test, where it compares the converted scores' ranks between time one and time two. The Mann-Whitney U test is used in testing the differences between two groups by comparing the medians instead of the means. For the categorical data, chi-square tests for independence were used to examine the relationship between the variables and fraud occurrences. This test is used to explore relationships between categorical variables and their significance. The test compares the frequency of cases in one variable with another variable (Pallant, 2007). These univariate tests examined whether there were significant differences in the corporate governance characteristics and earnings management variables between the fraudulent and non-fraudulent companies on a univariate basis.

Correlation analysis was performed on the data to identify general associations between dependent variables and independent variables and as well as associations among the independent variables. This analysis helps in identifying any significant collinearity problems that could affect the logistic regression analysis.

To further determine the multivariate relationships between the corporate governance characteristics, earnings management variables and corporate fraud, logistic cross-sectional regression analysis was carried out using the proposed models for the corporate governance and earnings management variables. The corporate governance characteristics and earnings management variables of fraudulent and non-fraudulent companies were tested using logistic regression analysis to examine the relationship of each variable with fraud occurrences. This will answer question three.

Logistic regression analysis was used in this study due to the disproportionate sample groups (Maddala, 1991). Maddala also states that the coefficients of explanatory variables are not affected due to disproportionate sampling, but the constant term is affected. However, it is only necessary to correct the constant term if the objective of the study is to develop a predictive model (Palepu, 1986). Logistic regression also allows the predictors to be discrete, continuous, and dichotomous or a mix (Tabachnik & Fidell, 2007), which is suitable for this study. Logistic regression is appropriate for studies where the dependent variable data are dichotomous (Morgan et al., 2007; Pallant, 2007; Tabachnik & Fidell, 2007). Multiple regression or ordinary linear regression is not suitable for a study that has categorical dependent variables and a not normal distribution (Pallant, 2007). Furthermore, logistic regression does answer the

same questions as discriminant analysis and multiple regressions, with the exception of dichotomous dependent variables, and it is relaxed on the assumptions for the predictor (independent variables), namely normality, linearity and equal variances (Hair Jr, Balck, Babin, Anderson & Tatham, 2006; Tabachnik & Fidell, 2007). Logistic regression analysis attempts to correctly predict the outcome from a set of predictors, which is the aim of this study. Also, the use of logistic regression in analysing the data is consistent with many other studies in the same area as this study (Beasley, 1996; Beasley et al., 2000; Beneish, 1997, 1999a; Bradbury et al., 2006; Carcello & Nagy, 2004; Grove & Basilico, 2008; Hasnan et al., 2008; Persons, 1995).

The goal of logistic regression is the same as other statistical techniques of regression, that is _to find the best fitting and most parsimonious, yet biologically reasonable model to describe the relationship between an outcome (dependent or response model) and a set of independent (predictor or explanatory) variables' (Hosmer & Lemeshow, 2000, p. 1). Logistic regression was adopted for this study to explore whether certain sets of predictors could indicate if a company is at-risk of fraud, where the dependent variables are dichotomous, taking the values 0 for non-fraudulent companies and 1 for fraudulent ones. The independent variables or predictors for corporate governance and earnings management were discussed in chapter four. The analysis was performed separately for corporate governance characteristics and earnings management variables. The models used to analyse the data will now be explained.

To analyse and test the relationships between the corporate governance variables and the likelihood of corporate fraud occurrence, the following models (consistent with Beasley, 1996; Uzun et al. 2004; Persons, 2005) were used for the logistic regression analysis:

$$\text{FRAUD}_i = \alpha + \beta_1 \text{INDBOD}_i + \beta_2 \text{DUALITY} + \beta_3 \text{TENURE}_i + \beta_4 \text{BODMEET}_i + \beta_5 \text{TBOD}_i + \beta_6 \text{ETHNIC}_i + \beta_7 \text{DIROWN}_i + \beta_8 \text{INDAC}_i + \beta_9 \text{OUTDIR}_i + \beta_{10} \text{ACMEET}_i + \beta_{11} \text{BLOCK}_i + \varepsilon_i$$

Where:

FRAUD = A dummy variable with a value of 1 when a firm is alleged to have experienced financial statement fraud and a value of 0 otherwise.

INDBOD = The percentage of board members who are not the companies' managing directors (not currently officers or employees of the companies).

DUALITY = The CEO is also the chairman of the board.

TENURE = The number of years the chairman has served as a director.

BODMEET = The frequency or number of board meetings in a year.

TBOD = The number of members on the board.

ETHNIC = The chairman's ethnicity; Malay or other.

DIROWN = The percentage of manager (insider) ownership of company shares.

INDAC = The proportion of independent audit committee members to total number of audit committee members.

OUTDIR = The proportion of audit committee member having at least one additional directorship in another company to total number of members.

ACMEET = The number of audit committee meetings held in a year.

BLOCK = The percentage of individual blockholders in the companies.

i = The firms.

ε = The residual.

β = The slope coefficient.

To analyse and test the earnings management variables, the same model was used:

$$FRAUD_i = \alpha + \beta_1 DSRI_i + \beta_2 GMI_i + \beta_3 AQI_i + \beta_4 SGI_i + \beta_5 TATA_i + \beta_6 DEPI_i + \beta_7 LVI_i + \beta_8 INVR_i + \beta_9 INVSR_i + \varepsilon_i$$

Where:

DSRI = Days' sales in receivables index
GMI = Gross margin index
AQI = Asset quality index
SGI = Sales growth index
TATA = Total accruals to total assets index
DEPI = Depreciation index
LVI = Leverage index
INVR = Inventories ratio
INVSR= Inventories growth over sales growth ratio

Before the logistic regression was carried out, multicollinearity analysis was performed on all variables. It is important to check for high inter-correlations among the predictor or dependent variables. There should not be high correlations among the dependent variables, and there should be some correlation, ideally high correlation, between the dependent variables and the independent variables. There is no formal or particular way to address this issue under logistic regression; therefore, multiple regression analysis was carried out to obtain the collinearity statistics' results. The tolerance value and VIF value for the collinearity statistics' results indicate whether there is a multicollinearity problem with the variables. A tolerance value under 0.1 indicates that there are high correlations between the variables and a VIF value of more than 10 indicates there is a possibility of multicollinearity among the variables (Pallant, 2007). A correlation analysis was also conducted on all variables to see whether any (independent) variables were highly correlated, which could indicate the presence of a multicollonearity problem.

According to Hair Jr. et al. (2006) there are three approaches to assessing the overall fit of a logistic regression model namely; *Statistical measures of overall model fit*, *Pseudo* R^2 and C*lassification accuracy*. The first is statistical measures of overall model fit The first approach have two test that are Omnibus Test of Model Coefficients, and Hosmer-Lemeshow Goodness of Fit Test. The chi-square (Omnibus Test of Model Coefficients) test for the change in the log-likelihood (-2LL) value from the base model which is comparable to the F-test in multiple regression analysis. Logistic regression is estimated much like multiple regression in that a base (null)

model is first estimated to provide a standard for comparison (Hair Jr. et al., 2006). The null model (Block 0) only has a constant included (Field, 2009; Hair Jr. et al., 2006) and is generated as the first step of the regression model development. Independent variables are added to the null model so as to improve its predictability. Multiple regression uses the mean to set the base model and calculate the total sums of squares meanwhile, logistic regression uses the mean to set the log likelihood value (Hair Jr. et al., 2006).The log likelihood indicates the improvement in the likelihood of data observed (Block 1) in the hypothesised model with the model without the data observed (Block 0). The base model is the Block 0 (a model without entering the variables/data), which will be the baseline to compare the predictors' model (Block 1- model when variables/data is entered) with. The significant value for the chi-square test should be less than 0.05 for the predictors' model in Block 1, which means the model with the predictors is better than the base model. The Hosmer-Lemeshow test is another statistical measure of the overall fit of the analysis. For this test, a significant value of more than 0.05 indicates that the model is good (Tabachnik & Fidell, 2007).

Second, the Pseudo R^2 in logistic regression (R^2 in multiple regressions) is another indicator of the usefulness of a model. This is shown by the Cox and Snell R^2 and Nagelkerke R^2 values, which indicate the amount of variation in the dependent variable explained by the model (Tabachnik & Fidell, 2007). The third is Classification Table which indicates how well the model predicts the category to be correct. The Classification Table in the base model is compared with the predictors' inclusion model to see the improvement as a result of the inclusion of the predictors (Tabachnik & Fidell, 2007). A higher percentage of accuracy in the predictors' model means the model is useable as it is better than the base model.

The Wald test is used to test the significance of each coefficient in a model (Tabachnik & Fidell, 2007). Logistic regression focused on the Wald test, coefficients and odds ratios for interpretation of the results (Hair Jr. et al., 2006; Morgan et al., 2007; Pallant, 2007; Tabachnik & Fidell, 2007). A predictor with a significant value of less than 0.05 indicates a significant predictor for the model. The β values provided in the variables in the equation table are equivalent to the B values in multiple regressions (Pallant, 2007), and these values indicate the direction of the relationship

(positive or negative). Thus negative values indicate an increase in independent variables will result in a decrease in the dependent variable or the other way round with positive values (Pallant, 2007).

The odd ratios in logistic regression are presented by the Exp(β). Kleinbaum, Kupper, Muller and Nizam (1998, p. 658) define odds as ‗the ratio of the probability that some event (e.g. developing lung cancer) will occur divided by the probability that the event will not occur (e.g. not developing lung cancer)'. Tabachnik and Fidell (2007, p. 461) state that odds ratios indicate ‗the change in odds of being in one of the categories of outcome when the value of a predictor increases by one unit'. Odd ratios indicate an increase/decrease of the odds for each unit, increase the predictor variables. Hosmer and Lemeshow (2000) define odd ratios as the ratios of the odds for y = 1 to the odds for y = 0. If the odds value is more than one, the odd of the outcome of 1 occurring increase as the predictors increases (Field, 2009; Pallant, 2007).

5.6 Summary

This chapter presented the methodology adopted in this study and gave reasons for the methods adopted. It also explained the measurement of the variables and the sources of information from which the data were gathered. Even though financial data can be obtained from financial statements, most of the data in this study were obtained from the Datastream database. This was to ensure the accuracy and consistency of the data used. A discussion on the sampling method used, which is a vital part of this study, was also presented in this chapter.

The results of the data analyses and hypotheses testing are presented in the next chapter.

Chapter 6
Results and Discussion

This chapter presents the results of the various tests carried out on the data for this study. The chapter starts with a general discussion of the overall characteristics of the sample. The following sections present the results of the descriptive and inferential analyses of the data for the corporate governance and earnings management variables. The inferential analyses performed on both sets of data were univariate analysis, correlation and collinearity analyses, and logistic regression analysis. Univariate analysis was performed on the corporate governance and earnings management variables using the chi-square and Mann-Whitney U tests in order to determine differences between the two independent groups (non-fraudulent and fraudulent companies) in continuous measures for all years studied. The correlation and collinearity analysis was performed to determine if there was a multicollinearity problem for the data before the logistic regression was performed. Logistic regression was performed to determine the relationships between the variables and the likelihood of fraud, which will highlight significant predictors of the likelihood of fraud occurrences. The presentation of the results is divided into three sections. The first section gives a brief overview of the sample. The second presents the results for the corporate governance variables, and the third presents the results for the earnings management variables. A summary of the results is presented at the end of the chapter.

6.1 Descriptive Overview of the Sample

Data were collected from both samples—non-fraudulent and fraudulent companies, as determined in Chapter Four, section 4.2. Descriptive analysis was carried out to determine the frequency of certain phenomena in both sets of data; this included corporate governance variables and earnings management variables. Descriptive analysis of the total assets (in millions of RM[13]) of non-fraudulent and fraudulent companies, as well as the statistical test of differences between the two groups' total assets, is presented in Table 6-1. Both nonparametric tests, Wilcoxon and Mann-

[13] The Malaysian currency is the ringgit, with the currency sign RM.

Whitney U, were performed on the data and the result indicates that the difference between the two groups is not significant. This is consistent with the selection criteria of the samples, where both groups were matched according to their industry, time period and company size (measured by total assets).

Table 6-1 Comparison of sample companies' total assets of both groups (RM Million)

	Non-fraudulent (Total assets)	Fraudulent (Total assets)
Mean	399,307	542,436
Max	1,187,353	1,724,590
Min	47,138	55,917
Wilcoxon Test (*p*)	0.859	
Mann-Whitney U test (*p*)	0.095	

6.2 Corporate Governance Analyses and Results

This section presents the analyses and results of the corporate governance variables. The section starts with the results from the descriptive analysis of the first year of fraud. In this study, the first year of fraud refers to the year the company was first charged with fraud by the Malaysian Securities Commission (MSC) and listed in the MSC Enforcement Release (hereafter referred to as year *t*). The year prior to the first year of fraud is referred to as year t-1. The second part of the section presents the inferential (univariate and logistic regression) analyses and results for year *t*, followed by a discussion of the analyses and results for year *t-1*. As discussed in Chapter four (section 4.2.1), the corporate governance variables analysed were: independence of board of directors (INBOD), size of board (TBOD), frequency of board meetings (BODMEET), director shareholdings (DIROWN), chairman's duality (DUALITY), chairman's tenure (TENURE), chairman's ethnicity (ETHNIC), independence of audit committee members (INDAC), percentage of audit committee members holding outside directorships (OUTDIR), frequency of audit committee meetings (ACMEET) and institutional shareholding (BLOCK). The descriptive results will now be presented.

6.2.1 Descriptive analyses and results of corporate governance variables

This section presents the descriptive analyses and results of the corporate governance variables for year *t* and *t-1*. The descriptive analyses for the corporate governance variables were carried out separately for the categorical (dichotomous) and continuous variables. The categorical/dichotomous variables (DUALITY and ETHNIC) are described using frequencies analysis, while the continuous variables are described using the variables' means. To analyse the differences in both dichotomous variables between year's *t* and *t-1*, the chi-square test was performed, while the Wilcoxon Sign Ranks test was performed to test the differences in the continuous variables between year's *t* and *t-1* for each group. The results for the dichotomous variables are presented in Table 6-2.

Analysis of both years indicated that chairman duality (DUALTIY) and ethnicity (ETHNIC) for non-fraudulent companies were not significantly different. In year *t* (first year of fraud), out of 149 non-fraudulent companies, 16% of the companies' board chairmen were also CEO, and this is consistent with the year prior to the first year of fraud (year *t-1*). On the other hand, the fraudulent companies' descriptive analysis indicated that there were differences in the percentages of duality and ethnicity between the two years. The descriptive analysis showed that 28% of fraudulent companies had dual roles in year *t,* an increase from 9% in year *t-1*. The Malaysian Code of Corporate Governance (MCCG, 2001) stresses the importance of the separation of chairman and CEO, as this helps prevent the CEO from overpowering the board. However, the MCCG (2001) does not make separation of the roles mandatory. The results show that a majority of the companies followed the MCCG best practices, which stress the need to separate the roles of CEO and chairman. A detailed investigation into this variable for the fraudulent group suggested a troubling scenario where at least three of the companies had changes in directors or directors resigning within a year of appointment leading up to year *t*. This could indicate that the board might have been aware of fraudulent activities before they were made public. Nevertheless, the chi-square test for both groups indicated no significant difference in DUALITY between year *t* and *t-1*. The insignificant difference between both groups may be due to a majority of companies complying with the MCCG best practices. One might question if the separation of these two roles

is a good practice in Malaysian companies. But nevertheless, the MCCG 2012 recommends these roles be separated and the chairman is a non-executive member of the board.

For the second dichotomous variable, ETHNIC, 46% of non-fraudulent companies' chairmen were Malay for year *t*, which is a slight decrease from 49% in year *t-1*. For the fraudulent companies, 27% of the chairmen were Malay for year *t* and 18% for year *t-1*. Again the chi-square test did not reveal any significant difference in ETHNIC for both groups of companies between the two years studied. With respect to these two dichotomous variables, the results indicate that there is no difference between the two years for both groups of companies. The fact that Chinese are the major players in the capital market and own a significant number of public companies could contribute to the high number of Chinese chairmen in Malaysian companies.

Table 6-2 Frequency distribution for duality and ethnicity of non-fraudulent and fraudulent companies for year's *t* and *t-1*

Variables		**Non-fraudulent companies**			**Fraudulent companies**		
		Year *t*	**Year *t-1***	***Z***	**Year *t***	**Year *t-1***	***Z***
DUALITY	**YES**	24 (16%)	24 (16%)	-0.000	2 (28%)	1 (9%)	-1.000
	NO	125 (84%)	125 (84%)		9 (72%)	10 (91%)	
	Total	**149**	**149**		**11**	**11**	
ETHNIC	**MALAY**	69 (46%)	73 (49%)	-1.265	3 (27%)	2 (18%)	-1.000
	OTHERS	80 (54%)	76 (51%)		8 (73%)	9 (72%)	
	Total	**149**	**149**		**11**	**11**	

Table 6-3 presents the continuous variables' means for both groups of companies for the two years. For the non-fraudulent companies, the means for each of the variables did not show obvious differences between year's *t* and *t-1*. There are small differences in percentage of INBOD, INDAC and OUTDIR of the two years for non-fraudulent companies. On the other hand, for the fraudulent companies there were quite obvious differences in the means for almost all the variables between the two years. However, it cannot be said that there was any significant difference in the practices of both groups for the two years. Further analysis was carried out to investigate whether there

was a significant difference in the practices of both groups for the two years using the Wilcoxon Sign Rank test.

Table 6-3 Discriptive analysis of corporate governance continous variables of non-fraudulent and fraudulent companies for year's *t* and *t*-1

Variables	No-fraud/Year *t*			No-fraud/Year *t-1*			Fraud/Year *t*			Fraud/Year *t-1*		
	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
INBOD (%)	42.35	67	29	40.44	67	27	43.83	71	33	37.35	67	25
TBOD	7.9	15	4	7.9	15	4	7.27	12	4	7.2	9	5
BODMEET	5.1	17	2	5.1	14	2	8.8	30	5	6.35	16	3
DIROWN (%)	10.24	82	0	10.34	95	0	9.07	52	0	10.4	52	0
TENURE	9.8	40	1	9.8	39	1	4.5	12	1	8.4	41	1
INDAC (%)	75.58	100	40	73.42	100	60	71.47	100	50	74.3	100	.3567
OUTDIR (%)	60.44	100	0	58.34	100	0	43.15	100	0	50.15	100	0
ACMEET	4.79	17	3	4.8	16	3	6.44	13	4	5.4	7	2
BLOCK (%)	41.35	89	0	41.4	86	0	21.15	58	0	21.15	58	0

In order to compare the corporate governance practices over the two years, the Wilcoxon Sign Rank test was carried out. This test, also known as the Wilcoxon Matched Pairs Signed Rank test, is designed for use with repeated measures, which in this study refers to the corporate governance variables in year's *t* and *t-1*. This test is also appropriate when samples are matched on specific criteria (Pallant, 2007). The results are presented in Table 6-4.

The test revealed that for the non-fraudulent group, three corporate governance variables were significantly different between the two years. These variables are the percentage of independent board members (INBOD), chairman tenure on the board (TENURE) and the percentage of independent audit committee members (INDAC). All three variables (INBOD, TENURE and INDAC) were significantly different at the 5% significance level ($p < 0.05$). The results show that the percentages of INBOD, TENURE of chairman and percentage of INDAC were higher in year *t* than year *t-1*.

The effect size of the differences for INBOD was medium (0.24) and INDAC was small (0.19); however, the effect size of TENURE was large (0.65). The reason could be it was time to change the directors/chairman. On the other hand, the fraudulent group's result indicates only the frequency of audit committee meetings (ACMEET) was significantly different between the two years, at the 10% significance level and with a small effect size (0.14). The effect size (*r*) makes clear the strength of the relationship between the dependent and independent variables while statistical significance provides information on whether any relationship exists between the dependent variables and independent variables (Cohen, Cohen, West & Aiken, 2003). Cohen (1988) indicates that an effect size of 0.1 is small, 0.3 is medium and 0.5 is large.

Table 6-4 Wilcoxon Sign Rant Test of differences of Corporate Governance Continous Variables for Non-fraudulent and Fraudulent Companies across years

Variables	Non-fraudulent companies			Fraudulent companies		
	z	*p*	*r*	*z*	*p*	*r*
INBOD (%)	-2.993[a]	0.003***	0.24	-1.334[a]	0.182	-
TBOD	-0.734[a]	0.463	-	-0.740[c]	0.459	-
BODMEET	-0.191[a]	0.849	-	-0.851[a]	0.395	-
DIROWN (%)	-0.071[a]	0.943	-	-0.507[c]	0.612	-
TENURE	-8.227[a]	0.000***	0.65	-1.069[a]	0.285	-
INDAC (%)	-2.386[a]	0.017**	0.19	-0.184[a]	0.854	-
OUTDIR (%)	-1.479[a]	0.139	-	-1.604[c]	0.109	-
ACMEET	-0.787[c]	0.431	-	-1.802[a]	0.072*	0.14
BLOCK (%)	-1.273[a]	0.203	-	-1.214[a]	0.225	-

a, b and c denote the sum based on positive rank, negative ranks equal to positive ranks and positive ranks, respectively.
*,**,*** denote significance at 10%, 5% and 1%, respectively.

6.2.2 Inferential analyses of corporate governance variables

This section presents the results of the inferential analyses and hypotheses testing for the corporate governance variables. The inferential analyses and results are divided into three parts: first is the univariate analysis and hypotheses testing of differences; the second part is the results of the correlation and collinearity analyses; and the third part presents the results of the logistic regression analysis and hypotheses testing of relationships.

6.2.2.1 Differences in corporate governance variables between fraudulent and non-fraudulent companies

This section presents the results of the univariate analysis and hypotheses testing of differences (Ha) for the corporate governance variables (which answers research question one) for years *t* and *t-1*. Univariate analysis and the chi-square and Mann-Whitney U tests were performed to test the corporate governance variables' hypotheses for both years. The results are divided into four sections according to the corporate governance characteristic, namely: board of directors' characteristics, board chairman's characteristics, audit committee's characteristics and institutional shareholders. A summary of the results is presented in Table 6-5.

Table 6-5 Mann-Whitney U Test of differences of corporate governance variables of non-fraudulent and fraudulent companies for both years

Variable	Year *t*			Year *t-1*		
	Z	***p***	***r***	***Z***	***p***	***r***
INBOD	-0.296	0.768	-	-1.200	0.230	-
TBOD	-2.781	0.005**	0.22	-2.053	0.040**	0.16
BODMEET	-2.946	0.003**	0.21	-0.944	0.345	-
DIROWN	-1.228	0.219	-	-0.526	0.599	-
TENURE	-2.139	0.032*	0.17	-1.461	0.144	-
INDAC	-1.222	0.222	-	-0.787	0.431	-
OUTDIR	-2.312	0.021*	0.18	-1.311	0.190	-
ACMEET	-3.062	0.002**	0.24	-0.386	0.700	-
BLOCK	-2.540	0.011*	0.20	-2.797	0.005*	0.22
DUALITY	1.000	0.562	-	1.000	0.462	
ETHNIC	0.347	0.182	-	2.766	0.096***	

*, **,*** denote significance at the 1%, 5% and 10% levels, respectively.

Board of directors' characteristics

Univariate analysis was carried out on the board of directors' characteristics, which were: percentage of independent board directors (INBOD), size of board (TBOD), frequency of board meetings (BODMEET) and percentage of directors' shareholding ownerships (DIROWN). The analysis was carried out to test the null hypotheses (for differences between groups) of all four corporate governance characteristics. The results are presented in Table 6-5.

The univariate result shows that there was no significant difference between the non-fraudulent and fraudulent companies with respect to the percentage of INBOD for both years. Therefore, the null hypothesis 1a is not rejected for both years. This result indicates that there is no difference in the independence of board members between the two groups. The Malaysian Code of Corporate Governance requires companies to have at least a third of the board members be independent. This could be one of the reasons why there is no difference between the two groups in this variable. This result is consistent with the findings of Hasnan et al. (2008) that the independence of the board has no significant relationship with fraudulent financial reporting in Malaysia. The MCCG (2012) recommends reassessment of directors' independence every year to ensure that they are genuinely independent from the company. Perhaps a suggestion by Ahrens, Filatotchev and Thomsen (2011) in their discussion on the new frontier of corporate governance should be taken into consideration. They suggest going beyond just assessing directors' independence and looking at their competency as well.

The size of the board (TBOD) was found to be significantly different between the non-fraudulent and fraudulent companies in both years. In year *t,* TBOD was significant at the 1% significance level ($p = 0.005$). The results show that the strength of the relationship ranged from small to medium ($r = 0.22$) in the differences between non-fraudulent and fraudulent companies with respect to TBOD. While in year *t-1* TBOD was significant at the 5% significance level ($p = 0.040$) with a small strength ($r = 0.16$) in the differences of TBOD between the two groups. Therefore, the null hypothesis 2a is rejected for both years. These results show that there is a significant difference in the size of the board (TBOD) between the non-fraudulent and fraudulent companies for both years. The analysis of the mean ranks showed that the board size for the non-fraudulent companies is significantly larger than the fraudulent companies

for both years, which indicates that non-fraudulent companies have more directors on their boards than fraudulent companies. This result shows that having at least eight members on the board can influence (reduce) the likelihood of corporate fraud. The effectiveness of a TBOD of at least eight members in this study is consistent with the suggestions by Jensen (1993) and Lipton and Lorsch (1992), so it can be concluded that the minimum number of board members suggested by these authors is applicable and effective in the Malaysian environment. This result is consistent with Hasnan et al. (2008) and the recommendation of the MCCG Blueprint (2011). Also, having a large number of directors did not increase the effectiveness of board monitoring and control. This finding is consistent with Chen et al. (2007) and Samili and Labelle (2009).

Univariate analysis of the frequency of board meetings (BODMEET) showed that there was a significant relationship between the frequency of board meetings of non-fraudulent and fraudulent companies for year *t*, with a significance value of 0.003 at the 1% significance level. Therefore, null hypothesis 3a is rejected. This result indicates that there was a significant difference between the non-fraudulent and fraudulent companies with respect to BODMEET. The strength of the relationship is 0.21, which is a small-to-medium strength of association in the differences in BODMEET between the two groups. The mean ranks showed that the fraudulent companies‘ means were higher than the non-fraudulent companies‘. This shows that fraudulent companies tend to have more meetings in the first year of fraud than the non-fraudulent companies. This result suggests the possibility that having more meetings is a distress sign for a company, perhaps due to fraudulent activities being uncovered. And most probably it is uncovered in year *t.* This result is not consistent with Abbott et al. (2004) and Chen et al. (2007), who found the more frequent the board meets the better, as they can control and monitor management activities. But it is consistent with Uzun et al. (2004) and Bedard et al. (2004), who found that frequent board meetings do not necessarily lead to effective monitoring and control.

However, the same null hypothesis (H3) is rejected for year *t-1*. The result indicated that there was no significant difference between the non-fraudulent and fraudulent companies with respect to the number of board meetings (BODMEET) for year *t-1*. A detailed investigation showed that the average number of board meetings held by non-fraudulent and fraudulent companies for that year did not vary widely; between 5 and

6 meetings, respectively. This could contribute to the result not being significantly different between the two groups. The reason could be that the directors were not aware of any fraudulent activities yet in this year and therefore only had the minimum number of meetings.

Analysis of the directors' shareholdings (DIROWN) indicated that there was no significant difference between the two groups with respect to the percentage of directors with shareholdings for both years; therefore, null hypothesis 4a is not rejected. This result is in contrast with the findings of Owens-Jackson et al. (2009), who discovered that a higher percentage of director ownership in companies reduces the likelihood of fraudulent financial reporting. The insignificant differences in directors' shareholdings between the groups in Malaysia may be due to the fact that companies in Malaysia are often family owned. Thus, a majority of companies have the owner's family members on the board; this is true for both non-fraudulent companies and fraudulent ones.

Chairman's characteristics

This section presents the results of the univariate analyses and null hypotheses testing of the chairman's characteristics, namely: chairman's duality (DUALITY), ethnicity (ETHNIC) and number of years as chairman of the board (TENURE). The results are presented in Table 6-5.

Testing of hypothesis 5a proved that that there was no significant difference in chairman's duality (DUALITY) between the non-fraudulent and fraudulent companies for both years; therefore, H5 is not rejected. Upon investigation of this variable, the descriptive analysis (Table 5-2) showed that for both years studied 84% of non-fraudulent companies' CEOs were not board chairman. A similar result was found for fraudulent companies, where in year *t,* 72% of the fraudulent companies' CEOs were not board chairman, and 91% in year *t-1*. This result indicates that the separation of CEO and board chairman for both groups was not statistically different. The Malaysia Corporate Governance Code (MCCG) does not require companies to keep these roles separate; however, it does encourage their separation and requires companies to states the existence of dual roles in their reports. Even though the separation is not mandatory, both groups of companies did have quite a high percentage of board chairmen who were not CEO. This may have contributed to the

insignificant results for this variable. This shows that Malaysian companies adhere to the MCCG best practices and separate the roles of CEO and chairman.

Null hypothesis 6a is not rejected as the result showed that there was no significant difference between the non-fraudulent and fraudulent companies with respect to the ethnicity of board chairman (ETHNIC) for year *t*. However, for year *t-1* the result did not support null hypothesis 6a, as it indicated that there was a significant difference in chairman's ethnicity between non-fraudulent and fraudulent companies, with a significance value of 0.0.096 (significant at 10% significance level). Therefore, null hypothesis 6a for ETHNIC is rejected; there was a significant difference between the non-fraudulent and fraudulent companies with respect to chairman's ethnicity. The r value was 0.16, indicating that the strength of the difference was small. The frequencies distribution analysis (Table 6-3) clearly shows that 9 out of 11 companies had non-Malay's chairmen in the fraudulent group, while in the non-fraudulent group the distribution was almost even (almost 50 were Malay).

The result of the analysis did not support null hypothesis 7a for year *t* as it was found that there was a significant difference in chairman's tenure (TENURE) between non-fraudulent and fraudulent companies, with a significance value of 0.03 (significant at 5% significance level). The r value was 0.17, indicating that the strength of the difference is small. The mean ranks analysis showed that the non-fraudulent companies' chairmen's tenure was higher than the fraudulent companies'. Null hypothesis 7a for year *t-1* is not rejected as the result showed that there was no significant difference between the non-fraudulent and fraudulent companies with respect to the tenure of the board chairman in year *t-1*. The result for TENURE indicated that only in year *t* was TENURE significantly different between the two groups of companies, with a small strength of association in the differences. Upon investigation of the mean ranks, the result indicated that non-fraudulent companies having a chairman with a longer tenure reduces the likelihood of fraud. This may be due to the fact that the length of time increases the chairman's knowledge and expertise in monitoring the company. This result is consistent with the findings of Chen et al. (2006), who note that longer tenure reduces the likelihood of fraud. Liew, Alfan and Devi (2015) in their study on the relationship of director's tenure, related party transaction expropriation and firm value conclude that the longer the tenure the more effective in controlling and monitoring. Higher tenure increases the firm value.

The MCCG 2012 has limited the tenure to 9 years, of which an independent director may continue;

- Subject to director's re-designation as a non-independent director;
- Board must make justification
- Obtain the approval of shareholders if the directors retains as independent director.

The proposed MCCG 2016 continues to emphasize on the 9 years tenure of directorship. This emphasized could be due to the notion that the longer the tenure increases the influence of directors over the board decision (Hill and Phan, 1991; Mace, 1986; Paton and Baker, 1987; Hermalin, 2005). This study found that (on univariate analysis result) that the non-fraudulent companies have higher chairman's tenure as compared to fraudulent companies. Upon investigation on the data, the non-fraudulent companies' average tenure is 9.8 while fraudulent companies were less than that (4 – 8.4). One possible explanation could be, the director become more experienced and knowledgeable with respect to the company's activities and thus increases the effectiveness in monitoring and controlling the company's activities. The differences in the institutional setting could have impacted on the result.

Audit committee characteristics

This section presents the results of the univariate analysis and null hypotheses testing of the audit committee characteristics, namely: the independence of the audit committee (INDAC), proportion of audit committee members holding more than one outside directorship (OUTDIR) and frequency of audit committee meetings (ACMEET). The results are presented in Table 6-5.

Null hypothesis 8a for the percentage of INDAC is not rejected as the univariate analysis showed that there was no significant difference in the percentage of independent audit committee members (INDAC) between the two groups for both years. This result is not consistent with the findings of Owens-Jackson et al. (2009). A further investigation into this variable made it clear that almost all companies in both groups had three members on their audit committees, and this is as per the requirement of Bursa Malaysia (Listing Requirement, paragraph 15.10). The Listing Requirement also requires a majority of the audit committee members to be

independent (at least 2/3). For both groups and in both years the percentage of independent audit committee members was more than 70%. This could be the reason why there is no significant difference between the two groups with respect to INDAC. Again, this shows that companies in Malaysia fulfilled the requirements of Bursa Malaysia and the MCCG recommendations. The same argument applies here with the independence of the board members. The level or integrity of these ‗independent members' can be questioned in cases where they failed to uphold their role.

For year *t,* hypothesis 9a is rejected as the analysis indicated that there was a significant difference in the percentage of audit committee members that held outside directorships (OUTDIR) between the two groups. The significance value was 0.021, significant at the 5% significance level. The r value was 0.18, noting a small effect size. The mean ranks analysis showed that more audit committee members in the non-fraudulent companies held outside directorship than those in the fraudulent companies. Having more directorships could enhance directors' knowledge and understanding of a wider range of business environments and activities, which could benefit the companies as directors will be more effective and efficient in carrying out their duties. In particular, this applies to monitoring companies' financial reporting and activities. This results show that having directors with multiple directorship could benefit the company which is consistent with the findings or Ferris et al. (2003). However, H9a is not rejected for year *t-1* as no significant difference was detected between the non-fraudulent and fraudulent companies with respect to the percentage of OUTDIR.

Null hypothesis 10a is rejected as the analysis indicated that there was a significant difference in the number of audit committee meetings (ACMEET) between the two types of company in year *t*. It was significant at the 1% significance level, with a *p* value of 0.002 and an r value of 0.24, meaning the effect size ranged between small and medium strength. Consistent with the number of board meetings, the number of audit committee meetings for fraudulent companies was higher than non-fraudulent companies; this showed in the analysis of mean ranks (where fraudulent companies' mean ranks were higher than non-fraudulent companies'). More frequent board or audit committee meetings could signal that companies are in distress, as this study shows that fraudulent companies tend to have more meetings than non-fraudulent ones. This result is consistent with the result for hypothesis 3a. The result is not

consistent with the findings of Abbot et al. (2004) and Uzun et al. (2004). However, null hypothesis 10a for year *t-1* is not rejected as the result indicated that there was no significant difference between the two groups with respect to the number of audit committee meetings held in a year (ACMEET). This could suggest that any problem that might occur is only detected in year *t.*

Institutional shareholding ownership (blockholders)

This section presents the results for the univariate analysis and null hypothesis testing on the percentage of institutional shareholding ownership (BLOCK). The result is presented in Table 6-5.

For both years studied, null hypothesis 11a is rejected as the result of the analysis showed that there was a significant difference in the percentage of institutional ownership (BLOCK) between the non-fraudulent and fraudulent groups. The result for year *t* indicated a significance value of 0.011 (at 5% significance level) with an *r* value of 0.20 (effect size ranged from small to medium). While for year *t-1,* BLOCK was significant at the 1% level with $p = 0.005$ and $r = 0.23$ (small to medium effect). The analysis of mean ranks showed that non-fraudulent companies had higher mean ranks than the fraudulent companies, which means the percentage of institutional ownership was higher in non-fraudulent companies than fraudulent ones. This result suggests that having a higher percentage of institutional shareholdings (BLOCK) reduces the likelihood of fraud. This result is consistent with the findings of Burns (2003), Bange and De Bondt (1998), Gilson (1990), and Shleifer and Vishny (1986).

Table 6-6 shows the differences in the mean ranks for each variable that was found to be significant for year‘s *t* and *t-1* for the two groups. The total number of board members (TBOD) in the non-fraudulent companies was significantly higher than the fraudulent companies, which was shown by the mean ranks of 83 for the non-fraudulent companies and 44 for the fraudulent companies in year *t*. Year *t-1* showed mean ranks for non-fraudulent companies of 83 and fraudulent companies of 53. The number of board meetings (BODMEET) for non-fraudulent companies was lower than the fraudulent companies, and this was shown in the mean ranks of 78 for non-fraudulent companies and 119 for fraudulent ones. The analysis showed that for TENURE there was a significant difference between the non-fraudulent companies (mean ranks = 83) and the fraudulent companies (mean ranks = 52) where the tenure

of the chairman in the non-fraudulent companies was higher than the fraudulent ones. This indicates that for non-fraudulent companies the chairman is in office longer than the fraudulent companies. The percentage of outside directorships held by audit committee members (OUTDIR) for non-fraudulent companies was higher than for fraudulent companies, as seen in the mean ranks (non-fraudulent = 83 and fraudulent = 50). This could indicate that holding more directorships does indeed increase directors‘ abilities to control and monitor companies‘ financial situations. The results also showed consistency in the difference in board meetings, as the mean ranks of audit committee meetings (ACMEET) for the two groups were significantly different (non-fraudulent companies = 78, fraudulent companies = 119). The percentage of independent intuitional ownership, or blockholders, (BLOCK) in non- fraudulent companies for both years was higher than fraudulent companies (non-fraudulent = 83 and fraudulent = 46 for year *t*; non-fraudulent = 83 and fraudulent = 43 for year *t-1*). This could mean that having more institutional ownership allows for better control and monitoring of companies‘ activities and decision making. The mean rank for ETHNIC, which was found to be significant in year *t-1*, showed that 51% of the non-fraudulent companies had non-Malay chairmen, while 82% of the fraudulent companies had non-Malay chairmen.

Table 6-6 Comparison of mean ranks of significant corporate governance variables for both years

Variable		N	Year *t*		Year *t-1*	
			Median	Mean Rank	Median	Mean Rank
TBOD	Non-fraudulent	149	8	83	8	83
	Fraudulent	11	6	44	7	53
BODMEET	Non-fraudulent	149	5	78	-	-
	Fraudulent	11	5	119	-	-
TENURE	Non-fraudulent	149	7	83	-	-
	Fraudulent	11	4	52	-	-
OUTDIR	Non-fraudulent	149	67	83	-	-
	Fraudulent	11	33	50	-	-
ACMEET	Non-fraudulent	149	5	78	-	-
	Fraudulent	11	5	119	-	-
BLOCK	Non-fraudulent	149	46	83	45	83
	Fraudulent	11	21	46	21	43
ETHNIC	Non-fraudulent	149	-	-	**Frequencies**	51%
	Fraudulent	11	-	-		82%

6.2.2.2 Corporate governance variables and the likelihood of corporate fraud occurrences

This section presents the results of the logistic regression analysis. The main objective in using logistic regression analysis, apart from its suitability and appropriateness considering the sets of data in this study, is to examine the overall fit of a model that includes the variables of interest and to analyse the significance of the variables. This part of the analysis tested the relationship hypothesis (Hb), which answered research question two. The first logistic regression model was run for all 11 corporate governance variables (a full regression model), regardless of whether they were found to be significant of not in the univariate analysis. This direct logistic regression was performed to assess the impact of the corporate governance variables on the likelihood of fraud occurrences. The model used was described in Chapter Four

(section 5.5.2). Stepwise logistic regression was also performed to analyse the best fit model for this study. The full regression model was found to be the best fit model for both years. The following section presents the results of the logistic regression analysis. The results of this analysis can also be found in Table 6-7. Before the logistic regression analysis was performed the correlation and collinearity analysis was carried out to ensure there was no multicollinearity problem among the variables. The result for the correlation and collinearity analysis will be presented first, followed by the logistic regression results.

Multicollinearity analysis

Before undertaking a logistic regression analysis, a multicollinearity test needs to be performed. This test is important as the result will enable the identification of independent variables that are highly correlated with each other. Upon this identification, if there are any highly correlated independent variables, appropriate action needs to be taken to prevent this variable from distorting the results. For this purpose, correlation analysis was carried out. A collinearity analysis was carried out subsequently to confirm the existence of multicollinearity, which may not be evident in the correlation analysis. Appendix 2 presents the matrix of the Spearman rank order correlation coefficient for all 11 corporate governance variables for year's *t* and *t-1*. The analysis shows that for year *t,* out of the six variables that were found to be significant in section 6.4.2.1, only TENURE was not confirmed as significantly correlated with the non-fraudulent/fraudulent companies. However, for year *t-1,* all three variables found to be significant in the univariate analysis were also found to be significantly correlated with the non-fraudulent/fraudulent companies. The correlation matrix also showed that some significant correlations exist among the corporate governance variables; however, the correlation coefficient was not large enough to cause a multicollinearity problem (none of the correlation coefficients were larger than 0.80).

Appendix 3 presents the collinearity analysis for both years. According to Pallant (2007), tolerance is an indicator of the variability of the specified independent variable not explained by the other independent variables in the model, while the variance inflation factor (VIF) is the inverse of the tolerance value. A tolerance value of less than 0.10 indicates that there are high multiple correlations among the

independent variables, which could mean there is a multicollinearity problem. On the other hand, a VIF value higher than 10 indicates that there is a multicollinearity problem. The result of the collinearity diagnostic showed that none of the corporate governance variables were highly correlated and the results of the tolerance and VIF analyses confirmed that multicollinearity is not an issue for the corporate governance variables studied.

Goodness of fit test

The goodness of fit test lets the researcher know how well their model performs over and above the results of the baseline model (Block 0). There are three ways to assess the goodness of fit of a model: the goodness of fit test (Omnibus Test of Model Coefficient and Hosmer-Lemeshow Goodness of Fit Test), classification accuracy and Cox and Snell R Square, and Nagelkerke R Square values.

The Omnibus Test of Model Coefficient for year *t* indicated a chi-square value of less than 0.05 (significance value < 0.05); this means that the model with the variables used as predictors is better than the baseline model (Block 0). The result of this analysis showed a chi-square with a *p* value of 0.000, which is less than 0.05 and therefore the model is good. The second test of goodness of fit is the Hosmer-Lemeshow Goodness of Fit test. For the model to be good, the significance value in the Hosmer-Lemeshow table should be more than 0.05 (Pallant, 2007). The result showed that the Hosmer-Lemeshow test had a significant value of 0.955 with a chi-square value of 2.640. For year *t-1*, the Omnibus Test of Model Coefficient indicated a chi-square *p* of 0.001, which is less than 0.05 and therefore the model is good. The second test of goodness of fit was the Hosmer-Lemeshow Goodness of Fit test. The result for Hosmer-Lemeshow test indicates a significant value of 0.793 with a chi-square value of 4.664. Therefore, the results for both years showed that the model is good.

The classification accuracy for year *t* showed how well the model can predict the correct category (in this study, non-fraudulent and fraudulent companies). The result for classification accuracy in Block 1 was compared with Block 0 to check for an improvement in the correct prediction after the predictors‘ variables were entered into the model. If the percentage of correct predictions increases in Block 1 over Block 0, there is an improvement and the model is good. For year *t,* the model correctly

classified 95% of cases overall, which is an improvement over the 93.1% for Block 0. Therefore, this model is an improvement over the baseline model. The Cox and Snell R Square and Nagelkerke R Square values indicate the amount of variation explained by the model (Pallant, 2007). The result for this analysis showed that the model has a Cox and Snell R Square value of 0.222 and a Negelkerke R Square value of 0.565. This suggests that the variability of fraud status explained by the variables is between 22.2% and 56.5%. This means that the model does reasonably well in explaining the proportion of variation in the sample companies. Analysis of the goodness of fit of the model found that, overall, the full model containing all 11 predictors is statistically significant in predicting the likelihood of fraud occurrences, $\chi^2 = 40.25$, $df = 11$, $N = 160$, $p < 0.001$.

For year *t-1,* the classification accuracy indicated that the model correctly classified 94.4% of cases overall, which is an improvement over the 93.1% of the null model. Therefore, this model is improved from the baseline model. The result for this analysis showed that the model had a Cox and Snell R Square value of 0.177 and Negelkerke R Square value of 0.449. This suggests that the variability of fraud status explained by the variables is between 17.7% and 44.9%, meaning the model is reasonably good at explaining the proportion of variation in the sample companies. Analysis on the goodness of fit of the model found that overall the full model containing all 11 predictors was statistically significant at predicting the likelihood of fraud occurrences, $\chi^2 = 31.17$, $df = 11$, $N = 160$, $p = < 0.001$.

Results of Wald Test of Logistic Regression for Years t and t-1

This section discusses the results of the hypothesis testing on the relationship between the corporate governance variables and the likelihood of corporate fraud occurrences. The results can be seen in Table 6-7. The Wald test was used to test the significant of each coefficient in a model (Tabachnik & Fidell, 2007). Logistic regression focused on the Wald test, coefficients and odds ratios for interpretations of results. The results are divided into four broad characteristics of corporate governance.

Table 6-7 Logistic Regression estimation of likelihood of corporate fraud occurences for both years

Variables	Year *t*			Year *t-1*		
	***B* (sign)**	**Exp *B* (*Odds ratio*)**	***p***	***B* (sign)**	**Exp *B* (*Odds ratio*)**	***p***
INBOD	-0.062	0.940	0.276	-0.053	0.949	0.294
TBOD	-0.784	0.457	0.024**	-0.608	0.544	0.065*
BODMEET	1.045	2.842	0.038**	0.403	1.496	0.105
DIROWN	-0.049	0.952	0.171	-0.078	0.925	0.027**
DUALITY	-0.391	0.676	0.716	1.387	4.003	0.274
TENURE	-0.254	0.776	0.080*	-0.050	0.951	0.308
ETHNIC	1.458	4.296	0.175	1.936	6.931	0.075*
INDAC	0.004	1.004	0.916	0.002	1.002	0.973
OUTDIR	-0.017	0.983	0.341	0.002	1.003	0.836
ACMEET	-0.598	0.550	0.194	-1.049	0.350	0.110
BLOCK	-0.078	0.925	0.009***	-0.093	0.911	0.003***
CONSTANT	5.407	4.349	0.214	9.804	5.649	0.83
Hosmer-Lemeshow χ^2		40.25			31.17	
Hosmer-Lemeshow *df*		11			11	
Hosmer-Lemeshow *Sig*		0.001			0.001	
Cox & Snell R Square		0.222			0.177	
Negelkerke R Square		0.565			0.449	

a. Variable(s) entered at step 1: INBOD, TBOD, BODMEET, DIROWN, DUALITY, TENURE, ETHNIC, INDAC, OUTDIR, ACMEET, BLOCK
*, **, *** denote significances at 10%, 5% and 1%, respectively.

As shown in Table 6-7, only four corporate governance variables made a significant contribution (predictor) to the model for year *t*, namely: board size (TBOD), number of board meetings per year (BODMEET), chairman's tenure (TENURE) and percentage of institutional shareholdings (BLOCK). The outside directorships held by audit committee members (OUTDIR) and number of audit committee meetings in a year (ACMEET), which were found to be significant in the univariate analysis, were not significant in the regression model. The results for year *t-1* indicated four corporate governance characteristics that made significant contributions to the model: board size (TBOD), percentage of directors' shareholdings (DIROWN), chairman's ethnicity (ETHNIC) and percentage of institutional shareholdings (BLOCK). The two corporate governance characteristics, TBOD and BLOCK, which were found to be

significant in the univariate analysis, were also significant in the regression model; however, DIROWN and ETHNIC were not significant in the univariate analysis but were significant in the logistic regression analysis. The results showed that only two corporate governance variables (TBOD and BLOCK) were consistent (significant) predictors of the likelihood of corporate fraud over the two-year period studied. The following section discusses the results in detail.

Board of directors' characteristics

Analysis of the independence of the board of directors (INBOD) for both years evidenced that this factor is not a significant contributor to the effectiveness of corporate governance in fraud deterrence, as shown in both the univariate and logistic regression analyses. This suggests that independent board directors do not reduce the likelihood of fraud occurrences. The Bursa Malaysia Listing Requirement (Paragraph 15.02) requires companies to have at least two directors, or 1/3, on the board that are independent (whichever is higher). Upon investigation of this variable, the mean INBOD for both groups of companies were above the required percentage, showing that compliance with the requirement by both groups of companies was high. This result is consistent with the findings of Hasnan et al.(2008) on fraudulent financial reporting in Malaysia. Other studies on the role of board independence with respect to its effectiveness in monitoring company activities and performance in a Malaysian setting also found that the independence of board member is not significant (Abdul Rahman & Mohamed Ali, 2008; Bradbury et al., 2006; Hashim & Devi, 2008; Li & Ang, 2000). On the other hand, this result is in contrast with Beasley (1996), Xie et al. (2003), and Lipton and Lorsch (1992), who found that the higher the percentage of independent board members, the better the control. However, these studies were not conducted in Malaysia. This study shows that on average the percentage of independent board members is 37% to 43%, which is above the required percentage. Therefore, null hypothesis 1b is accepted for both years, indicating that INBOD is not a significant predictor of the likelihood of corporate fraud. This result highlights the ineffectiveness of INBOD at monitoring and controlling company activities and reporting. Perhaps a more in-depth study could be carried out to examine this variable in order to understand why it is weak; is it due to the number of independent members or the members themselves not being competent in carrying out their duties? Perhaps the suggestion by Ahrens et al. (2011) to look beyond directors‘ independence could

be further investigated, e.g. the competency of the directors in terms of knowledge and experience could be studied.

For year *t*, size of the board (TBOD) was a significant predictor variable in the logistic regression results, and this was consistent with the univariate analysis. TBOD was significant at the 5% significance level, with a *p* value of 0.024. The result indicated a negative *B* value of -0.784, which means that an increase in the number of board members reduces the likelihood of fraud occurring. The odds ratio (0.457) was less than 1, so for every additional person on the board, fraud will be 0.457 times less likely to occur, controlling other factors in the model. The non-fraudulent companies had a higher number of members on their boards than the fraudulent ones. The results indicated that a higher number of members on the board reduced the likelihood of corporate fraud. The size of the board (TBOD) was also a significant predictor in the logistic regression result, which was consistent (significant) with the univariate analysis for year *t-1*. TBOD was significant at the 10% significance level, with a *p* value of 0.065. The result showed a negative *B* value of -0.065, which means that an increase in the number of board members reduces the likelihood of fraud occurrences. The odds ratio (0.544) was less than 1, indicating that for every additional person on the board, fraud will be 0.544 time less likely to occur, controlling other factors in the model. This result shows that having at least eight members on the board could influence (reduce) the likelihood of corporate fraud. The effectiveness of a TBOD of at least eight members in this study is consistent with the suggestion by Jensen (1993) and Lipton and Lorsch (1992). Beasley (1996) found that a larger-sized board increases the likelihood of fraud. This result is consistent with the findings of Hasnan et al. (2008) as well as the recommendation of the MCCG Blueprint (2011). The findings of Beasley are in contrast with the result of this study, which found that on average fraudulent companies have a lower number of board members than non-fraudulent companies, suggesting that a larger board is more effective at reducing the likelihood of fraud. So, it can be said that in a different cultural and legal environment (e.g. Malaysia), more members on the board increases the effectiveness of a company‘s governance and as a result reduces the likelihood of corporate fraud. Therefore, null hypothesis 2b is rejected for both years; there is a significant relationship between size of board and the likelihood of corporate fraud in Malaysia.

For year *t,* the number of board meetings in a year (BODMEET) was also a significant predictor variable in the logistic regression results, and was consistent with the univariate analysis; therefore, null hypothesis 3b is rejected. The results showed that there is a significant relationship between the frequency of board meetings and the likelihood of corporate fraud occurrences. BODMEET was significant at the 5% significance level, with a *p* value of 0.038. There was a positive B value of 1.045, which means that frequent board meetings are unlikely to reduce the likelihood of fraud. The odds ratio (2.842) was more than 1, so for every additional board meeting, fraud will be 2.842 times more likely to occur, controlling other factors in the model. While frequent board meetings may not reduce the likelihood of corporate fraud, this factor could possibly highlight that a company is in distress and at risk of fraud. This result is consistent with Uzun et al. (2004) and Bedard et al. (2004), who found that frequent board meetings do not necessarily lead to effective monitoring and control. However, BODMEET was found not to be significant in year *t-1* and therefore for year *t-1* null hypothesis 3b is accepted. One possible reason for this inconsistent result is that the average number of board meetings in year *t-1* was six for fraudulent companies and five for non-fraudulent companies, so there was little difference between the groups.

Directors‘ shareholding (DIROWN) was not a significant contributor to reducing the likelihood of corporate fraud, as shown by both the univariate and logistic regression analyses for year *t*. This indicates that the percentage of directors‘ shareholdings did not reduce the likelihood of fraud in year *t*; therefore, null hypothesis 4b is accepted. Directors‘ shareholdings (DIROWN) appeared to be a significant predictor in the regression model for year *t-1* but not in the univariate analysis. DIROWN was significant at the 5% level, with a *p* value of 0.027. There was a negative *B* value of -0.078, meaning an increase in the percentage of directors‘ shareholdings reduces the likelihood of fraud. The odds ratio (0.925) of less than 1 indicated that for every additional 1% of directors‘ shareholding, fraud will be 0.925 times less likely to occur. This result is in contrast with the findings of Owens-Jackson (2009). For both groups of companies, on average about 10% of directors held shares in the company, which is relatively low. The average directors‘ shareholding for fraudulent companies in year *t* was 9%, and for non-fraudulent companies it was 11%. One possible explanation for this predictor being significant in year *t-1* is that having 10% or more

directors' shareholding could reduce the likelihood of corporate fraud occurrences. Therefore, for year *t-1* null hypothesis 4b is not supported.

Chairman's characteristics

Chairman's duality (DUALITY) was not a significant contributor to the weaknesses of corporate governance in fraud deterrence, as shown in both the univariate and logistic regression analyses for both years studied. This implies that the chairman's dual role does not increase the likelihood of fraud. This result is consistent with the findings of Chen et al. (2006). Upon investigation of DUALITY in both groups, only 16% and 16% respectively of the non-fraudulent companies, and 18% and 9% respectively of fraudulent companies had a CEO who was also the board chairman for year's *t* and *t-1*. This shows that there was a low percentage of DUALITY in both groups of companies and the separation of CEO and chairman did not reduce the likelihood of corporate fraud. Therefore, null hypothesis 5b is accepted for both years. Even though Bursa Malaysia does not make it mandatory to separate the roles of board chairman and CEO, the majority of the companies in both groups did not have dual roles. Since this practice was somewhat the same in both groups, it could be a reason why no significant relationship was found. This could also indicate that the separation of board chairman and CEO is not effective in reducing the likelihood of corporate fraud in Malaysia. Perhaps having the CEO as the board chairman increases the governance over the company's activities and reporting due to the knowledge and experience that the CEO has of the company.

The results for year *t* indicated that chairman's tenure (TENURE) was another significant predictor variable in the logistic regression, and this was consistent with the univariate analysis; but it was not a significant predictor for year *t-1*. Therefore, null hypothesis 6b is rejected for year *t* and accepted for year *t-1*. TENURE was significant (at the 10% significance level), with a *p* value of 0.080. The result gave a negative *B* value of -0.254, which means that an increase in chairman's tenure reduces the likelihood of fraud occurrences. The odds ratio (0.776) was less than 1, indicating that for every additional year the chairman is on the board, fraud is 0.776 time less likely to occur, controlling the other factors in the model. The mean rank of chairman's tenure for the non-fraudulent companies was higher than for the fraudulent companies, which could indicate that longer chairman's tenure may possibly reduce

the likelihood of corporate fraud. The longer the tenure of the chairman the more knowledge and experience they have, which could contribute to reducing the likelihood of corporate fraud. Also, these chairmen are reluctant to take risks that could destroy their reputations, such as unlawful activities. This result is consistent with the findings of Chen et al. (2006) and Hill and Phan (1991).

Chairman's ethnicity (ETHNIC) was also not a significant contributor to the effectiveness of corporate governance in fraud deterrence, as shown in both the univariate and logistic regression analyses for year *t*; therefore, null hypothesis 7b is accepted. This shows that the chairman's ethnicity did not contribute to the likelihood of fraud occurrences. However, this variable was a significant predictor for year *t-1*. ETHNIC was a significant predictor in the regression model, but not in the univariate analysis. ETHNIC was significant at the 10% significance level, with a *p* value of 0.075. The result gave a positive *B* value of 1.936, which means an increase in non-Malay chairmen increases the likelihood of fraud. The odds ratio (6.931) was more than 1, indicating that having a non-Malay chairman increased the likelihood of corporate fraud occurrences by 6.931 times in year *t-1*. For year *t-1*, null hypothesis 7b is rejected, suggesting there is a significant relationship between the chairman's ethnicity and the likelihood of corporate fraud occurrences. The inconsistency in the results between the two years may be due to changes in board chairmen, as in year *t-1* only two Malay chairmen were recorded in the fraudulent sample, which increased to three in year *t.* This variable needs to be further examined to include cultural factors and practices that could contribute to the effectiveness of having more Malay chairmen.

Audit committee characteristics

Percentage of independent audit committee members (INDAC) was not a significant contributor to the effectiveness of corporate governance in fraud deterrence, as shown in both the univariate and logistic regression analyses for both years. Therefore, null hypothesis 8b is accepted for both years, which means that there is no significant relationship between the percentage of independent audit committee members and the likelihood of corporate fraud. This indicates that the percentage of independent audit committee members will not reduce the likelihood of fraud. This is consistent with the result for INBOD. An investigation into this variable showed that all of the companies

complied with the minimum requirements of Bursa Malaysia. Independence of audit committee members ranged between 72% and 74%; the minimum requirement is 66.67%. This could suggest that the minimum requirement is not effective in fraud deterrence. Perhaps the minimum number of audit committee members needs to be increased, as more members could increase the effectiveness of its role in governance, as can be seen from the size of the board.

Null hypothesis 9b is also accepted for both years as the same result was obtained for ACMEET. The number of audit committee meetings in a year (ACMEET) was not a significant contributor to the effectiveness of corporate governance in fraud deterrence, as shown by the logistic regression analyses for both years. However, ACMEET was significant in the univariate analysis for year *t*. This means that more audit committee meetings do not reduce the likelihood of fraud. An increase in audit committee meetings could possibly indicate that companies are in trouble. The Listing Requirement calls for audit committee to have at least four meetings a year. Both groups complied with this requirement; on average five to six meetings were held per year. Could it be this number of meetings is not sufficient for properly discussing and analysing financial reports? Or perhaps the meetings are not set up to critically assess financial matters? An in-depth analysis of this variable could help in understanding the effect of the meetings and how to improve their effectiveness. The results for INDAC and ACMEET are not consistent with the findings of Abbott et al. (2000), Uzun et al. (2004) and Owens-Jackson et al. (2009), who found a significant negative relationship between INDAC and ACMEET and the likelihood of fraud. Again, differences in culture and legal environment could contribute to the inconsistency between the results of this study and the studies mentioned above.

Outside directorships held by audit committee members (OUTDIR) were also found to be not a significant contributor to the effectiveness of corporate governance in fraud deterrence, as shown in the logistic regression analysis. However, this variable was found to be significant in the univariate analysis for both years. The analysis for both years on univariate level shows that there is significant difference for this variable between non-fraudulent and fraudulent companies where non-fraudulent companies were found to have higher percentage of directors with multiple directorships (holding directorship in other companies) which indicates that the number of outside directorships held by audit committee members is significantly

difference between groups of companies. However, the result is not significant with respect to its relationship to fraud. The univariate result is in contrast with the findings of Bedard et al. (2004) and Persons (2005), who suggest that when audit committee members hold more outside directorships, it reduces their effectiveness in carrying out their duties. Therefore, null hypothesis 10b is accepted for both years, meaning that there is no significant relationship between OUTDIR and the likelihood of corporate fraud. Holding many directorships, one could argue, increases the directors' knowledge and experience, which in turn improves their abilities and expertise. On the other hand, holding many directorships could become a problem as the director may struggle to concentrate on the matters at hand. Analysing and monitoring financial activities and reports is not easy and requires a lot of time. The high percentage of directors holding many directorships in this study (for both groups) was not beneficial to company governance as it did not reduce the likelihood of corporate fraud. The regulations do not impose any specific restrictions, but do require directors to disclose their multiple directorships. Further investigation could be carried out to determine how many is too many when it comes to effective governance. This could help regulators formulate more effective requirements for Malaysian companies.

Institutional shareholding ownership (blockholders)

Institutional shareholding (BLOCK) was the strongest significant predictor in the logistic regression analysis and was consistent with the univariate analysis. BLOCK was significant at the 1% level, with a *p* value of 0.009. There was a negative *B* value of -0.078, which means that an increase in the percentage of institutional shareholding reduces the likelihood of fraud occurrences. The odds ratio (0.925) was less than 1, indicating that for every additional percentage of institutional shareholdings, fraud is less likely to occur, controlling other factors in the model. Institutional shareholding (BLOCK) was another significant predictor in the regression model, but not in the univariate analysis. BLOCK was significant at the 1% level, with a *p* value of 0.003. There was a negative *B* value of -0.093, meaning an increase in the percentage of institutional shareholdings reduces the likelihood of fraud occurrences. The odds ratio (0.911) was less than 1, indicating that for every additional 1% of institutional shareholdings, it will be less likely for companies to commit fraud. Therefore, null hypothesis 11b is rejected for both years as this study shows that there is significant relationship between BLOCK and the likelihood of corporate fraud. Having a higher

percentage of institutional shareholding, subjects companies to more detailed scrutiny by institutions thus increase the effectiveness of institutional shareholdings. These institutions have the resources to monitor the companies' activities and reporting, which individual shareholders do not have. Institutions are more rigorous in monitoring, as they themselves have to answer to their investors if anything goes wrong.

Table 6-8 presents a summary of the means of the significant predictors of the non-fraudulent and fraudulent companies for both years. For the two years analysed, TBOD and BLOCK were the consistent significant predictors that influenced the likelihood of corporate fraud. Analysis of TBOD for both years showed that on average the fraudulent companies had a lower number of board member than the non-fraudulent ones (7 out of 11 fraudulent companies had less than 8 members on the board). This consistent result shows that the size of the board does play a role in reducing the likelihood of corporate fraud. Analysis of BLOCK for both years showed that out of 11 fraudulent companies, 9 companies' institutional shareholdings were lower than the mean for the non-fraudulent companies (41%). This result indicates that having at least 41% of company shares held by other institutions may influence (reduce) the likelihood of corporate fraud. This may be due to the companies facing more scrutiny from the institutional shareholders, which results in better monitoring of company activities. The MCCG Blueprint (2011) recommends that institutional shareholders to play a more proactive role in ensuring the investment they made are fruitful. They should be more effective in their monitoring role and increase the effectiveness of corporate governance in the company they invest in. Among others the MCCG Blueprint recommends that institutional shareholders to be transparent in their investment and include corporate governance in their investment analysis.

Table 6-8 Summary of significant (consistent) corporate governance predictors for both years

Variables	Year *t*		Year *t-1*	
	NF	**F**	**NF**	**F**
TBOD	8	7	8	7
BLOCK	41%	21%	41%	21%

NF = non-fraudulent companies, F = fraudulent companies

6.3 Earnings Management Analyses and Results

This section of the chapter presents the analyses (hypothesis testing of differences) and results for the earnings management variables. The first part presents the descriptive analyses and results for all five years analysed. The section then continues with the inferential analyses (univariate and logistic regression analyses) and results for the earnings management variables for all five years.

6.3.1 Descriptive analyses and results for earnings management

Table 6-9 shows the variables' means for non-fraudulent and fraudulent companies for the five years analysed, from the first year of fraud to four years prior. As discussed in Chapter Four, the variables are: days' sales receivables index (DSRI), gross margin index (GMI), assets quality index (AQI), sales growth index (SGI), total accruals (TATA), depreciation index (DEPI), leverage index (LVI), inventories ratio (INVR) and inventories growth over sales growth ratio (INVSR). Analysis was carried out to investigate whether there was any significant difference among the variables for each group across the five years using the Friedman test. The Friedman test made it clear that for the fraudulent companies; only AQI was found to be significantly difference across the period studied. The AQI for year *t-3* is found to be very low as compared to other years. Having very low AQI shoes that income has decrease significantly from year *t-4*. This could have contributed to the significant result. Upon investigation of the data did not show any significant fluctuation in companies' current assets and PPE (plant property and equipment). Other fraudulent companies' earnings management variables did not show any significant difference across the five years. For the non-fraudulent group, on the other hand, there were significant differences in GMI, AQI, DEPI, LVI and INVR.

Table 6-9 Comparison of earnings management variables' means for non-fraudulent and fraudulent companies across years

Variable	Non-fraudulent companies (median)						Fraudulent companies (median)					
	Year *t*	Year *t-1*	Year *t-2*	Year *t-3*	Year *t-4*	*p*	Year *t*	Year *t-1*	Year *t-2*	Year *t-3*	Year *t-4*	*p*
DSRI	0.938	0.977	0.977	0.999	0.959	0.398	0.931	1.052	0.867	1.007	0.774	0.493
GMI	1.015	1.014	1.029	1.011	1.000	0.062*	0.769	0.941	0.000	0.969	0.794	0.203
AQI	0.964	1.049	0.946	0.071	0.420	0.000***	0.920	0.434	0.755	0.872	0.457	0.070*
SGI	1.119	1.092	1.099	1.096	1.086	0.329	0.940	0.858	0.779	0.953	1.080	0.561
TATA	-0.025	-0.029	-0.017	-0.063	0.011	0.283	-0.065	-0.148	0.012	-0.000	-0.109	0.513
DEPI	0.984	0.946	0.982	0.993	0.980	0.056*	0.948	0.966	0.934	1.023	0.937	0.937
LVI	0.989	1.014	1.008	1.012	0.959	0.099*	1.069	1.149	1.095	1.029	1.017	0.742
INVR	0.078	0.101	0.084	0.101	0.053	0.048**	0.000	-0.099	-0.035	0.000	0.022	0.717
INVSR	-0.059	0.000	-0.009	0.005	-0.014	0.219	0.003	-0.129	0.000	0.047	0.076	0.617

*, **, *** denote significances at 10%, 5% and 1%, respectively.

6.3.2 Inferential analyses and results for earnings management

The inferential analyses are divided into three parts: the first part presents the univariate analysis (hypotheses testing of difference). This answers research question three. The second part covers the correlation and collinearity analysis, and the third part presents the logistic regression analysis, to test the relationship hypotheses and answer research question four. Univariate analysis was carried out on the earnings management variables (as discussed in Chapters Three and Four) using the nonparametric Mann-Whitney U test in order to determine the differences between the two independent groups on continuous measures. This analysis was carried out for all five years of data (years *t* to *t-4*) to find any differences in the earnings management variables between the non-fraudulent and fraudulent groups across the period under study. The discussions are presented in sections 6.3.2.1 and 6.3.2.2.

6.3.2.1 Differences in earnings management variables between fraudulent and non-fraudulent companies

This section presents the univariate analysis and results for the earnings management variables for the five-year period. The Mann-Whitney U test was performed on the earnings management data for year's *t, t-1*, *t-2,t-3* and *t-4*. The results of the analysis are presented according to variable. The analysis used to test the null hypotheses is as per discussed in Chapter Five, section 5.3.1. The results for the Mann-Whitney U test are presented in Table 6-10, while the results of the mean ranks for significant variables are presented in Table 6-11.

This study tested all nine earnings management variables' hypotheses for each year. The hypothesis is: There is no difference between fraudulent and non-fraudulent companies with respect to the earnings management indices/ratios (DSRI, GMI, AQI, SGI, TATA, DEPI, LVI, INVR and INVSR).

Days' sales receivable index (DSRI)

The null hypothesis for DSRI (H12a) is not rejected for year's *t, t-1*, *t-3* and *t-4*, as the univariate result revealed that there was no significant difference in DSRI between the two types of company for those four years. However, H12a is rejected for year *t-2*. The univariate analysis of DSRI for year *t-2* pointed out a significant difference between the two groups at the 5% significance level, with a *p* value of 0.026 and *r* value of 0.18 (small effect size). The mean ranks analysis for DSRI showed the non-

fraudulent group had higher mean ranks than the fraudulent group. Studies carried out in this field indicate differences in this index between the two groups; fraudulent companies are expected to have a higher DSRI (Rosner, 2003; Beneish, 1999). However, this notion does not seem to be applicable in the Malaysian setting, as no significant difference was found between the two groups with respect to DSRI, except for year t-2. Even so, fraudulent companies were found to have a lower DSRI compared to non-fraudulent ones. The fraudulent companies could be practicing income decreasing (reducing sales or receivables) during year t-2, as there is a high possibility that the companies were facing financial difficulties during that year.

Gross margin index (GMI)

The results for the univariate analysis (Table 6-9) of GMI for year's *t*, *t-1*, *t-2* and *t-3* indicated a significant difference between the non-fraudulent and fraudulent companies. The p-values for year's *t* and *t-1* were less than 0.05, while the p-values for year's *t-2* and *t-3* were less than 0.01 and 0.10, respectively. Therefore, null hypothesis 13a is rejected for all these four years. The results noted that the strength of association for the four years was small to medium in size. For all four years, the analysis of mean ranks (Table 6-10) indicated that the non-fraudulent group had higher mean ranks than the fraudulent group. GMI was consistently significant for the four years under analysis. However, H13a is not rejected for year *t-4* since the univariate analysis showed that there was no significant difference between the two types of company with respect to GMI.

A GMI of more than one shows that the gross margin of the company decreased. And companies with a GMI of more than one are expected to have manipulated earnings (Beneish, 1999). However, this study found that the fraudulent companies' GMI over the five years analysed were less than 1 (where the non-fraudulent companies' GMI were more than 1). This reveals that the fraudulent companies could possibly have been practising income-increasing acts. This result is in contrast with the findings by Beneish (1999), Bell and Carcello (2008), and Rosner (2003). This result is also inconsistent with a study conducted in Singapore on the choices of earnings management during the Asian financial crisis (Ming Chia, Lapsley and Lee; 2007). The study found that service-oriented companies engage in income decreasing method during the time of crisis. Differences in business environment and cultural

background could have contributed to this contrasting result, as the aforementioned studies were based in the US and Singapore.

Assets quality index (AQI)

The results of the univariate analyses (Table 6-9) for years *t*, *t-1*, *t-2* and *t-3* showed that there was a significant difference in AQI between the non-fraudulent and fraudulent companies at the 5% and 1% significance levels, respectively. The results also indicated that the strength of association ranged from small to medium. Therefore, null hypothesis 14a is rejected for all four years as the univariate analysis found there was a significant difference between the non-fraudulent and fraudulent companies with respect to AQI. In the mean ranks analysis (Table 6-10) for AQI, for year's *t, t-1* and *t-2* the mean index of AQI for the non-fraudulent companies was higher than for the fraudulent companies. However, for year t-3, the AQI mean ranks for non-fraudulent companies were lower than for the fraudulent companies. For year *t-4*, null hypothesis 14a is not rejected, as the univariate analysis indicated that there was no significant difference between the two groups with respect to AQI.

An AQI higher than 1 means that the company tended to engage in cost deferral, where it increased cost capitalization to defer cost. Upon investigation of this index, it was revealed that the fraudulent companies' AQI was lower than 1 for all years analysed—in fact quite low compared to the non-fraudulent companies'. This suggests that the fraudulent companies did not defer costs, which increased expenses and reduced income. Thus, it can be concluded that fraudulent companies tend to be involved in income-decreasing acts.

Sales growth index (SGI)

Null hypothesis 15a is rejected for year's *t*, *t-1*, *t-2* and *t-3* as the analysis showed that there was a significant difference in the SGI between the two groups for all four years. Results for all four years (Table 6-9) indicated that SGI was significant at 10%, 1% and 5%, respectively. The results also showed that the strength of association ranged from small to medium. Again, consistent with the GMI and AQI, the analysis of mean ranks (Table 6-10) for SGI proved that the non-fraudulent companies had higher mean ranks than the fraudulent ones. The null hypothesis for SGI (H15a) for year *t-4* is not

rejected as the univariate analysis indicated that there was no significant difference between the non-fraudulent and fraudulent companies with respect to SGI.

The SGI of the fraudulent companies from year *t*-3 to *t* were less than 1 and lower than the SGI for the non-fraudulent companies. Generally, it was expected that companies would avoid showing decreasing income in their financial statements due to the desire to prevent the shareholders and investors from thinking that company growth was decelerating, as this could have a negative impact on the companies' share prices. In Western countries, in particular the US, this seems to be the practice. The results of this study showed that the fraudulent companies' SGI was less than 1, which could indicate that the companies' engaged in income decreasing by lowering their sales or increasing their expenses. These companies could possibly have been in financially distress, which motivated them to manipulate earnings.

Total assets over total accrual index (TATA)

Null hypothesis 16a for TATA is not rejected for all five years studied as the univariate results (Table 6-10) showed that there was no significant difference between the non-fraudulent and fraudulent companies with respect to TATA for all five years. This result is consistent with the findings for AQI. Fraudulent companies' TATA was on average slightly higher than that for non-fraudulent companies. The calculation of this index, which acted as a proxy for the extent to which cash underlay reported earnings, indicated that companies with less cash are highly likely to be involved in fraud. A higher positive TATA will indicate this. Since no significant result was found in assessing the difference in TATA between the two groups, it can be said that earnings manipulation is highly unlikely to happen with respect to TATA.

Depreciation index (DEPI)

The univariate analysis (Table 6-10) of DEPI did not detect a significant difference between non-fraudulent and fraudulent companies for all five years studied. Therefore, null hypothesis 17a is not rejected. A DEPI greater than 1 indicates that the company's depreciation rate was reduced, which could possibly be due to a change in depreciation method (adopting income-increasing methods) (Beneish, 1999). The results on DEPI for both groups showed that on average the DEPI was less than 1, indicating that those companies did not adopt income-increasing methods to manage

earnings. The results also showed that there was no significant changes in DEPI over the five years studied for both groups.

Leverage index (LVI)

The null hypothesis for LVI (H18a) is not rejected for year's *t, t-2*, *t-3* and *t-4,* as the univariate results (Table 6-10) indicated that there was no significant difference between non-fraudulent and fraudulent companies with respect to this index for those four years. However, H18 is rejected for year *t-1*. Univariate analysis of LVI discovered that there was a significant difference between the two groups, at the 10% significance level with a *p* value of 0.092 and *r* value of 0.13 (small effect size). The mean ranks analysis (Table 6-11) of LVI indicated that the non-fraudulent group had lower mean ranks than the other group. An LVI greater than 1 signals an increase in leverage, which shows that debt increased. The LVI, on average, was slightly higher for fraudulent companies, which could indicate that the companies had high debt. Only in year *t*-1 was this index significantly different between the two groups (where the fraudulent companies were high in leverage/debt).

Inventories ratio (INVR)

The null hypothesis for INVR (H19a) is not rejected for year's *t, t-2*, *t-3* and *t-4*, as the univariate result (Table 6-10) revealed no significant difference between the non-fraudulent and fraudulent companies with respect to INVR for those four years. Null hypothesis H19 is rejected for year *t*-1 as the analysis showed that there was a significant difference in the INVR between the two groups at the 5% significance level, with a *p* value of 0.030 and *r* value of 0.17, indicating a small to medium effect size. The mean ranks analysis (Table 6-11) of INVR showed that the non-fraudulent group had higher mean ranks than the fraudulent group. On average, the INVR depicted that the fraudulent companies had lower ratios than the non-fraudulent ones, indicating that the fraudulent companies did not inflate their inventory figures. In fact, they may have been deflating their inventory values, which is an income-decreasing method in earnings management.

Inventories growth over sales growth ratio (INVSR)

The univariate analysis (Table 6-10) for year t showed no significant difference between fraudulent and non-fraudulent companies with respect to the INVSR for all five years studied. Therefore, null hypothesis 20a is not rejected for all five years. Upon investigation of this ratio, it was found that the INVSR for non-fraudulent companies was slightly lower and had a negative value (except for year *t*-3 at 0.005) compared to the fraudulent group. A positive ratio indicates that inventory is growing at a faster rate than sales, which could potentially be a sign of fraud (Schilit, 1993). The INVSR for fraudulent companies showed positive ratio figures except for year *t*-1. While the ratios for both groups did not significantly differ, it would be worth investigating this method of valuation for inventory in those companies.

Table 6-10 Mann-WhitneyU Test for earnings management variables of non-fraudulent and fraudulent companies for five years

Variables		DSRI	GMI	AQI	SGI	TATA	DEPI	LVI	INVR	INVSR
Year *t*	Z	-0.233	-2.350**	-2.303**	-1.939*	-0.988	-0.711	-1.076	-1.015	-0.246
	p	0.816	0.019	0.021	0.053	0.323	0.477	0.282	0.310	0.806
	r	-	0.19	0.18	0.15	-	-	-	-	-
Year *t-1*	Z	-0.624	-2.559**	-3.552***	-2.708*	-0.442	-0.057	-1.683*	-2.175**	-1.062
	p	0.533	0.010	0.000	0.007	0.659	0.954	0.092	0.030	0.288
	r	-	0.20	0.28	0.21	-	-	0.13	0.17	-
Year *t-2*	Z	-2.229**	-4.360***	-2.135**	-2.741***	-1.001	-0.954	-0.664	-0.786	-0.361
	p	0.026	0.000	0.033	0.006	0.317	0.340	0.507	0.432	0.718
	r	0.18	0.35	0.17	0.22	-	-	-	-	-
Year *t-3*	Z	-0.421	-1.716*	-2.945***	-2.283**	-0.145	-0.725	-0.131	-1.615	-0.017
	p	0.673	0.086	0.003	0.022	0.885	0.468	0.895	0.106	0.987
	r	-	0.14	0.23	0.18	-	-	-	-	-
Year *t-4*	Z	-1.318	-1.531	-0.462	-0.111	-1.575	-0.705	-0.529	-0.125	-0.145
	p	0.187	0.126	0.644	0.911	0.115	0.481	0.597	0.901	0.885
	r	-	-	-	-	-	-	-	-	-

a. Grouping variable: Fraudulent/non-fraudulent

*, **, *** denote significances at 10%, 5% and 1% levels, respectively.

Table 6-11 Mean ranks of earnings management significant variables for five years

Variables		Companies	N	Mean Ranks
Year *t*	GMI	Non-fraudulent	149	82.84
		Fraudulent	11	48.82
	AQI	Non-fraudulent	149	82.79
		Fraudulent	11	49.45
	SGI	Non-fraudulent	149	82.43
		Fraudulent	11	54.36
Year *t-1*	GMI	Non-fraudulent	149	83.05
		Fraudulent	11	46.00
	AQI	Non-fraudulent	149	84.03
		Fraudulent	11	32.64
	SGI	Non-fraudulent	149	83.19
		Fraudulent	11	44.00
	LVI	Non-fraudulent	149	78.83
		Fraudulent	11	103.18
	INVR	Non-fraudulent	149	82.66
		Fraudulent	11	51.18
Year *t-2*	DSRI	Non-fraudulent	149	82.72
		Fraudulent	11	50.45
	GMI	Non-fraudulent	149	84.84
		Fraudulent	11	21.73
	AQI	Non-fraudulent	149	82.62
		Fraudulent	11	51.73
	SGI	Non-fraudulent	149	83.23
		Fraudulent	11	43.55
Year *t-3*	GMI	Non-fraudulent	149	82.21
		Fraudulent	11	57.36
	AQI	Non-fraudulent	149	77.57
		Fraudulent	11	120.18
	SGI	Non-fraudulent	149	82.77
		Fraudulent	11	49.73

To sum up, GMI, AQI and SGI were found to be significantly different between the non-fraudulent and fraudulent companies for year's *t, t-1, t-2* and *t-3*. These results are consistent with the findings of Beneish (1999), Rosner (2003), and Grove and Basilico (2008), except that in those studies fraudulent failing companies tended to use income-increasing actions, but this study revealed that fraudulent companies preferred to adopt income-decreasing methods to manage earnings, consistent with the study by Ming Chia et al.(2007). A more comprehensive analysis of the relationship of these indices with the likelihood of corporate fraud occurrences can be found in the next section.

6.3.2.2 Earnings management variables and the likelihood of corporate fraud occurrences

The earnings management variables were further analysed. This analysis was carried out to test the null hypotheses (Hb) on the relationship between earnings management variables and the likelihood of corporate fraud occurrences, which answered question four. The first logistic regression model (as discussed in Chapter Five, section 5.5.2) was used on the eight (full model) earnings management variables for every year, regardless of whether they were found to be significant in the univariate analysis or not, to assess the impact of the earnings management variables on the likelihood of fraud occurrences. The analyses and results are presented according to year. The results of the correlation and collinearity analysis will be presented first, followed by those for the logistic regression. Table 6-12 presents the results of the goodness of fit test for the logistic regression model and Table 6-13 show the results for the logistic regression Wald test.

Multicollinearity analysis

Appendix 4 presents the correlation matrix of the Spearman rank order correlation coefficient for all nine earnings management variables for each of the five years. The analysis showed that all of the significant variables that were found to be significant in section 6.5.2.1 (the univariate analysis) were also found significant by the correlation matrix for all five years. The correlation matrix also showed that some significant correlations exist among the earnings management variables; however, the correlation coefficient was not large enough to cause a multicollinearity problem (none of the correlation coefficients were larger than 0.80), except for INVR. INVR was found to have a correlation coefficient of more 0.80 with INVSR for year *t-3*.

To further confirm that there would be no problem with multicollinearity, tolerance and VIF analyses were carried out (see Appendix 5) The collinearity diagnostic showed that eight of the earnings management variables (DSRI, GMI, AQI, SGI, TATA, DEPI, LVI and INVSR) were not highly correlated and the tolerance and VIF indicated that there was no multicollinearity problem for these variables. One variable was found to have a high correlation with another, and that was INVR, which was highly correlated with INVSR. This was due to some of the data used to calculate the ratio being the same (inventories); therefore, INVSR was excluded from the logistic regression model for all five years' analyses since this ratio was found to be not significant across all years in the univariate analysis.

Goodness of fit test

The results of the goodness of fits test for all five years can be seen in Table 6-12. The Omnibus goodness of fit chi-square tests for all five years indicated that the variables in the models provided significant information about the incidence of corporate fraud (year *t* = chi-square 19.35, p-value < 0.000; year *t-1* = 40.49, p-value < 0.000; year *t-2* = chi-square 62.24, p-value < 0.000; year *t-3* = chi-square 17.05, p-value < 0.030; and year *t-4* = chi-square 18.86, p-value < 0.016). The Cox and Snell R Square and Nagelkerke R Square determined the variance of likelihood of fraud occurrences that can be predicted from the model (as presented in Table 6-12). Overall, the results indicated that the full model containing all eight predictors was statistically significant in predicting the likelihood of fraud occurrences for all five years, with year *t*, X^2 = 19.35, *df* = 8, *N* = 160, *p* = < 0.05; year *t-1*, X^2 = 40.49, *df* = 8, N = 160, *p* = < 0.01; year *t-2*, X^2 = 62.24, *df* = 8, N = 160, *p* = < 0.01; year *t-3*, X^2 = 17.05, *df* = 8, N = 160, *p* = < 0.05; and year *t-4*, X^2 = 18.86, *df* = 8, N = 160, *p* = < 0.05.

Table 6-12 Logistic Regression (goodness of fit) of earnings management variables for five years

Goodness of fit test	Year *t*	Year *t-1*	Year *t-2*	Year *t-3*	Year *t-4*
Hosmer-Lemeshow χ^2	19.35	40.49	62.24	17.05	18.86
Hosmer-Lemeshow *df*	8	8	8	8	8
Hosmer-Lemeshow *Sig*	0.05	0.01	0.01	0.05	0.05
Cox & Snell R Square	0.114	0.224	0.322	0.101	0.111
Nagelkerke R Square	0.289	0.568	0.818	0.257	0.282

Results for logistic regression Wald test of earnings management for year's t, t-1, t-2, t-3 and t-4

The results of the Wald test on the earnings management variables for the five-year study period are presented below in Table 6-13. The Wald test was used to test the significance of each variable in the model.

Table 6-13 Logistic Regression (Wald Test) of significance of earnings management variables for year *t*, *t-1*, *t-2*, *t-3* and *t-4*

Variables		DSRI	GMI	AQI	SGI	TATA	DEPI	LVI	INVR	Constant
Year *t*	***B***	0.276	-2.799	0.305	-0.921	1.710	0.250	-0.117	-0.696	0.003
	Exp *B*	1.318	0.061*	1.356	0.398	5.529	1.284	0.889	0.498	1.003
	p	0.722	0.083	0.391	0.529	0.122	0.855	0.907	0.616	0.999
Year *t-1*	***B***	-2.722	-2.054	-0.221	-5.399	-5.399	0.109	-0.046	-0.114	6.906
	Exp *B*	0.066	0.128***	0.802	0.005**	0.005*	1.116	0.955	0.892	998.376
	p	0.170	0.001	0.288	0.023	0.081	0.907	0.974	0.848	0.114
Year *t-2*	***B***	-2.172	-10.554	-0.255	1.191	1.964	-0.011	0.575	-0.095	6.027
	Exp *B*	0.114	0.000***	0.775	3.290	7.128	0.989	1.778	0.909	414.634
	p	0.505	0.003	0.728	0.330	0.695	0.862	0.989	0.876	0.275
Year *t-3*	***B***	-0.247	0.381	0.321	-3.953	-0.328	-0.421	1.703	-1.303	-0.223
	Exp *B*	0.781	1.464*	1.378**	0.019***	0.720	0.656	5.490	0.272	0.873
	p	0.772	0.089	0.028	0.003	0.727	0.549	0.103	0.224	0.800
Year *t-4*	***B***	0.019	-1.182	0.001	0.314	-1.700	-0.729	-0.178	-1.133	-1.382
	Exp *B*	1.019	0.307**	1.001	1.370	0.183	0.482	0.837	0.339	0.530
	p	0.718	0.038	0.929	0.842	0.157	0.574	0.892	0.339	0.251

a. Variable(s) entered at step 1: DSRI, GMI, AQI, SGI, TATA, DEPI, LVI and INVSR

b. *, **, *** denote significances at 10%, 5% and 1%, respectively.

A discussion of these results by earnings management variable follows.

Days' sales receivable index (DSRI)

Null hypothesis 12b is not rejected for year *t*, *t*-1, *t*-2, *t*-3 and *t*-4 as the logistic regression analysis showed that there was no significant relationship between DSRI and the likelihood of corporate fraud occurrences for all five years analysed. The result for this index is consistent with the univariate analysis result, where there was no significant difference between the non-fraudulent and fraudulent groups with

respect to DSRI, except for year *t*-2. DSRI was found to be significantly different between the two groups in year *t*-2 at the 5% significance level; however, the *r* value was small (indicating a small effect size).

Gross margin index (GMI)

The significance of each coefficient in the model is presented in Table 6-13. Only one earnings management variable made a significant contribution to the model for the first year of fraud, and that was GMI. GMI was also found to be significant in the univariate analysis for this year. GMI was found to be significant at the 10% significance level, with a p-value of 0.083. There was a negative *B* value of -2.799, meaning a decrease in the GMI could highlight an increase in a company‘s risk of fraud. Therefore, null hypothesis 13b is rejected as the results showed that there was a significant relationship between GMI and the likelihood of corporate fraud occurrences.

The same null hypothesis (H13b) is also rejected for year *t*-1, t-2, *t*-3 and *t*-4 as the logistic regression analysis showed a significant relationship between GMI and the likelihood of corporate fraud for all four years. GMI was found to be significant at the 1% significance level, with a *p* value of 0.000 in year *t*-1. The result indicated a negative *B* value of -2.054, meaning a decrease in the GMI could suggest an increase in a company‘s risk of fraud. The odds ratio for these years is less than 0.5 (Table 6-13), meaning that companies with lower GMI is likely to engage in fraud.

In year *t*-2 GMI was found to be significant at the 1% significance level, with a *p* value of 0.003. There was a negative *B* value of -10.554, which means a decrease in the GMI could signify an increase in a company‘s risk of fraud. Again the B value is less than one which indicates that fraudulent companies‘ tend to have lower GMI.

In the three years prior to the first year of fraud (year *t-3*), GMI was found to be significant at the 10% significance level, with a *p* value of 0.089. The result gave a positive *B* value of 0.381, which means an increase in the GMI could highlight an increase in a company‘s risk of fraud, which is not consistent with the results for year‘s *t*, *t-1* and *t-2*. The odds ratio of 1.464 was higher than 1, indicating that for every percentage of increase in GMI, fraud will be 1.464 times less likely to occur.

Only one earnings management variable/index made a significant contribution to the model for the four years prior to the first year of fraud (year *t-4*); that was GMI. The *B* value was -1.182, so a decrease in the GMI could portend an increase in a company's risk of fraud. The odds ratio (0.307) was less than 1, so for every percentage of decrease in the GMI, fraud will be 0.307 times more likely to occur. This index was found not to be significant in the univariate analysis for this year. GMI was revealed to be the strongest significant predictor for all five years studied. These results show that fraudulent companies are more involved in income increasing method of managing earning, which could be the reason to cover poor performance.

Assets quality index (AQI)

AQI, which was found to be significant in the univariate analysis for year *t*, *t*-1 and *t*-2, was found to be not significant in the logistic regression analysis. Therefore, for these three years null hypothesis 14b is not rejected as the logistic regression result revealed no significant relationship between AQI and the likelihood of corporate fraud occurrence for the three years mentioned. The small effect size in the univariate analysis could have contributed to this result. The null hypothesis (H14b) was also not rejected for year *t*-4, and this is consistent with the result of the univariate analysis.

Null hypothesis 14b is rejected for year *t*-3, where AQI was found to be significant at the 5% level, with a *p* value of 0.028. There was a negative *B* value of -0.321, which means a decrease in the AQI could highlight an increase in a company's risk of fraud. The odds ratio of 1.378 was more than 1, indicating that for every percentage of decrease in AQI, fraud will be 1.378 times more likely to occur. AQI was found to be a strongest significant predictor of the likelihood of corporate fraud. This index was also found to be significant in the univariate analysis, with a *p* value of 0.003.

Sales growth index (SGI)

Null hypothesis 15b is rejected for year *t*-1 and *t*-3, as the logistic regression analysis showed that for these two years, SGI was a significant predictor of the likelihood of corporate fraud. This means there was a significant relationship between SGI and the likelihood of corporate fraud occurrences in year *t*-1 and *t*-3. These results are consistent with the results of the univariate analysis.

For year t-1, SGI was found to be significant at the 5% level, with a *p* value of 0.023. The *B* value was -5.399, so a decrease in the SGI could suggest an increase in a company's risk of fraud. SGI for year *t*-3 was a significant predictor at the 1% significance level, with a *p* value of 0.003. The result gave a negative *B* value of -3.953, meaning a decrease in the SGI could highlight an increase in a company's risk of fraud. The odds ratio for the two years was less than 1, indicating that for every percentage of decrease in the SGI, fraud is more likely to occur. Again this index indicates that fraudulent companies tend to engage in income decreasing as a decrease in the index shows a decrease in sales. With respect to this finding, there is the possibility that poor growth performance is a sign of fraud.

On the contrary, the null hypothesis for this index (H15b) is not rejected for the year *t*, *t*-2 and *t*-4 as the results revealed that for these three years no significant relationship was found between SGI and the likelihood of corporate fraud occurrences. The results for year *t*-4 were consistent with the univariate analysis; there was no significant difference between the two groups with respect to SGI. However, the results for year *t* and *t*-2 were not consistent with the univariate analysis result. SGI was found to be significantly different in the two years between the two groups with respect to SGI. The effect size for both years was small, which could possibly be the reason for the not significant results in the relationship hypothesis testing.

Total accruals over total assets index (TATA)

For the five years studied, TATA was found to be a significant predictor only in year *t*-1, at 10% significance level with a *p* value of 0.081. Therefore, for year *t*-1 null hypothesis 16b is rejected; there was significant relationship between TATA and the likelihood of corporate fraud in year *t*-1. The *B* value was -5.318, so a decrease in the TATA could suggest an increase in a company's risk of fraud. The odds ratio (0.005) was less than 1, so for every percentage of decrease in TATA increases the risk of fraud occurrences. This revealed that there is a high possibility that fraudulent companies face cash problems, which increase the risk of manipulating earnings. This result was not consistent with the univariate analysis, where no significant difference was found between the two groups with respect to TATA. On the other hand, H16b is not rejected for year *t*, *t*-2, *t*-3 and *t*-4, where TATA was found to not be a significant

predictor of the likelihood of corporate fraud; this was consistent with the univariate analysis result.

Depreciation index (DEPI)

Null hypothesis 17b is not rejected for years *t*, *t*-1, *t*-2, *t*-3 and *t*-4, as the logistic regression analysis showed no significant relationship between DEPI and the likelihood of corporate fraud occurrences for all five years analysed. The result for this index was consistent with the univariate analysis result, where there was no significant difference between the non-fraudulent and fraudulent companies with respect to DEPI for all years analysed. Upon further investigation, it was found that the DEPI for both groups did not fluctuate significantly over the five years studied. With no significant changes or differences between the two groups with respect to this index, it can be concluded that there was no significant relationship between DEPI and the likelihood of corporate fraud.

Leverage index (LVI)

Null hypothesis 18b is not rejected for year *t*, *t*-1, *t*-2, *t*-3 and *t*-4 as the logistic regression analysis depicted no significant relationship between LVI and the likelihood of corporate fraud occurrences for all five years analysed. The result for this index was consistent with the univariate analysis result, which detected no significant difference between the two types of company with respect to LVI. The not significant result for LVI for years *t*, *t*-2, *t*-3 and *t*-4 was consistent with the univariate analysis, which indicated no significant different between non-fraudulent and fraudulent companies with respect to LVI. However, the logistic regression result for year *t*-1 was in contra to the result of the univariate analysis of the same year. LVI was found to be significantly different between the two groups at the 10% significance level, with a small-sized effect ($r = 0.13$). The small effect could have influenced the result of the logistic regression.

Inventories ratio (INVR)

Null hypothesis 19b is not rejected for year *t*, *t*-1, *t*-2, *t*-3 and *t*-4, as the logistic regression analysis found no significant relationship between INVR and the likelihood of corporate fraud occurrences for all five years analysed. The result for this index was consistent with the univariate analysis result, where no significant difference

between the non-fraudulent and fraudulent companies was detected for INVR, except for year *t*-1. INVR was found to be significantly different between the two groups in year *t*-1 at the 5% significance level; however, the *r* value was quite low (0.17), indicating a small effect size. Again, the small effect size could be the reason that this index was not a significant predictor of the likelihood of corporate fraud.

Overall, the results made it clear that GMI was a significant predictor of the likelihood of corporate fraud consistently over the five years studied. This was consistent with the findings of Beneish (1999), Rosner (2003), and Grove and Basilico (2008). DSRI, TATA, DEPI and LVI were not significant contributors for all five years studied, which is in contrast with Beneish (1999) and Grove and Basilico (2008). SGI was a significant predictor only for year *t-1* and *t-3*, while AQI was significant for year *t-3* and TATA for year *t-1*.

Table 6-14 shows the comparison results for GMI between the mean benchmark (mean for non-fraudulent companies) and each of the fraudulent companies for the five-year period. The mean benchmark is the mean of the non-fraudulent companies. This mean was compared to the individual means of the 11 fraudulent companies. Analysis of the GMI for year *t* showed that for 9 out of 11 fraudulent companies GMI was lower than the mean benchmark. This result was consistent for year *t*-1, *t*-2 and *t*-3. For year *t-4*, 6 out of 11 companies‘ GMI indices were lower than the mean benchmark. This analysis indicated that fraudulent companies‘ GMI was lower than the non-fraudulent companies‘. Beneish (1999a) states that fraud is more likely to occur when there is a decrease in the company‘s gross margin (GMI larger than 1). However, this study found that the mean GMI for fraudulent companies was less than 1 for year *t*, *t-1*, *t-2* and *t-4*. Only year t-3 showed a GMI larger that 1 (1.350). This could signify that the fraudulent companies practised income-increasing earnings management. The significant predictor (of earnings management variables) is in contrast with the aforementioned studies with respect to the methods of managing earnings. For GMI, Beneish (1999a) shows that companies with decrease gross margin (GMI more than 1) is highly likely to engage in manipulation, but this study indicate that fraudulent companies GMI is less than 1, which mean that the gross margin increase. For other indices (SGI and AQI), this study found that fraudulent companies engaged in income-decreasing method of managing earnings which the other study in the US setting found that manipulators tend to engaged in income-

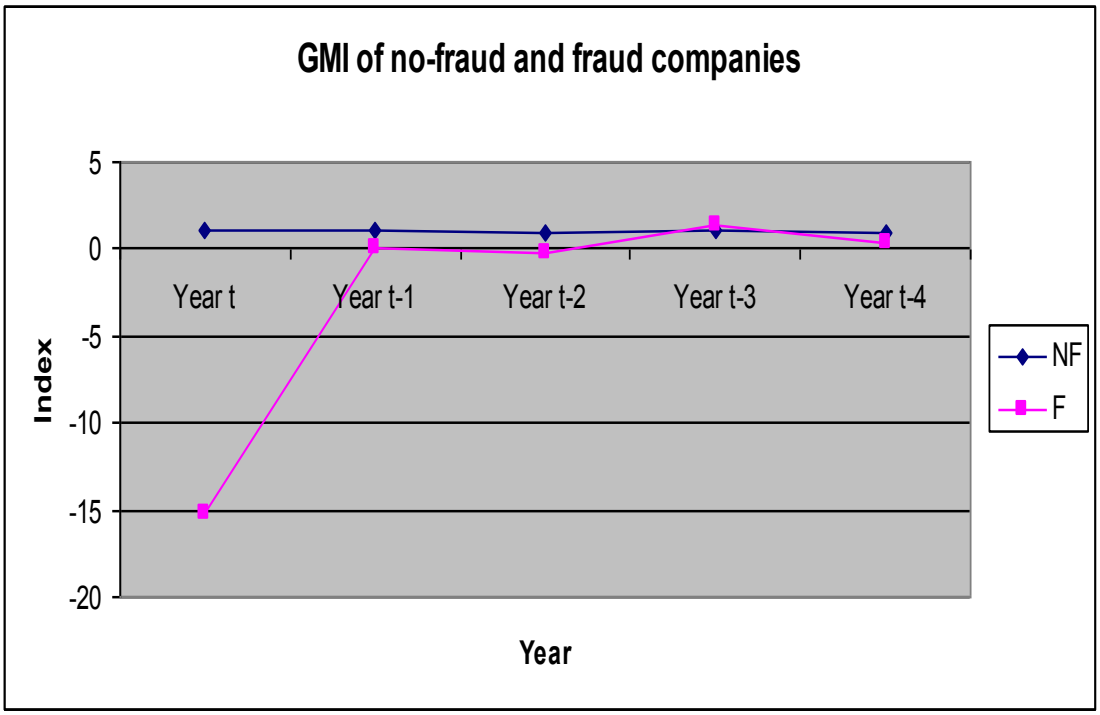
increasing method. The difference in countries' culture, legal system and environment could be the reason for this contrast (Ming Chia, 2007)

Table 6-14 Descriptive analysis of GMI by cases for year's *t, t-1*, *t-2*, *t-3* and *t-4*

Year	Mean Benchmark	Mean (Fraudulent companies)
Year *t*	1.010	-15.178
Year *t-1*	1.026	-0.011
Year *t-2*	0.986	-0.209
Year *t-3*	1.064	1.350
Year *t-4*	0.993	0.384

Figure 6-1 shows the trend analysis of the GMI for non-fraudulent and fraudulent companies over the years studied. The GMI of the fraudulent companies fluctuated more over the period, especially from year *t-1* to year *t*, compared to the non-fraudulent group. There is the possibility that in an effort to present a favourable financial statement, companies tried to report higher income to cover any major losses incurred, which would explain the high fluctuation in GMI from year *t-1* to year *t*.

Figure 6-1 Trend analysis of non-fraudulent and fraudulent companies' GMI across years



6.4 Additional Analysis

This section of the chapter extended the result of this study by applying the significant variables to four new companies that was charged with corporate fraud after 2007. Effort has been made to get feedback from the fraudulent companies in order to understand more regarding the company governance system, unfortunately, companies in Malaysia are not comfortable or willing to disclose such information especially when their companies has been charged with fraud. Lai (2007) states that Malaysian Chinese control firms are not open to interviews or studies regarding the companies affair especially the boardroom affair. This poses as a big obstacle in conducting such study in Malaysia as non-Chinese own companies' have the same attitude. The regulatory agencies are also not ready to disclose more than what has been published in their websites or the news. This part of additional analysis will be more to descriptive or interpretative view. Table 6-15 presents the descriptive analysis of the additional companies with respect to the significant variables found in this study.

Table 6-15 Descriptive analysis of significant variables of additional new fraud companies

Variables/ Company	Benchmark (result of the study)	1	2	3	4
TBOD	8	5	6	10	6
BODMEET	5	7	9	8	7
TENURE	10	5	5	4	7
BLOCK	41%	23%	25%	22%	20%
GMI (year *t*)	1.010	-0.231	-0.145	-0.023	0.312

The analysis presented in table 6-15 shows the mean of the five variables of non-fraudulent companies found in this study and the data for 4 new fraud cases from year 2008 to 2010 published on the SC enforcement release. The number of board members is lower than the benchmark of 8 for three of the company and higher for one company. With respect to TBOD, this analysis indicates that the appropriate number of board members is important to ensure the effectiveness company's governance. Too few members could indicate that the board did not have enough

members to monitor the company‘ activities. Too many members could means there are free rider on the board and the board is difficult to coordinate. The number of board meeting (BODMEET) for the four companies is more than 5 could indicate that company or the board has discovered fraud and more meetings is held to discuss about the problem. Institutional shareholdings (BLOCK) show that the four fraud companies have lower percentage of intuitional shareholding as compared to mean benchmark of non-fraud companies in study. This shows that the role of BLOCK is important in governing companies‘ activities. The important role of institutional shareholding was emphasis in the MCCG 2012. Consistent with the findings for earnings management indices, the analysis shows that the fraudulent companies GMI index is lower than the benchmark or GMI mean for non-fraudulent companies. This shows that the fraudulent company adopted income decreasing method to mellow down the effect of earnings manipulation. This additional analysis indicates that the significant variables highlighted in this study do have some merits and can be used in assessing the effectiveness of companies‘ governance.

6.5 Summary

Both univariate and logistic regression analyses were used in this study to examine the relationships between corporate governance characteristics, earnings management variables and the likelihood of corporate fraud occurrences. Various corporate governance characteristics and earnings management variables were measured and analysed; a complete discussion of the findings can be found in Chapter Seven.

The univariate analysis of the corporate governance variables for the first year of fraud (year t) indicated that there were significant differences in TBOD, BODMEET, TENURE, OUTDIR, ACMEET and BLOCK between the non-fraudulent and fraudulent companies. This part of the analysis answers research questions one and three. The results for the year prior to the first year of fraud (year t-1), however, indicated that only TBOD, ETHNIC and BLOCK were significantly different between the two groups. This study found that there was a difference in certain corporate governance characteristics between the non-fraudulent and fraudulent companies, namely: TBOD, BODMEET, TENURE and BLOCK for the first year of fraud and TBOD, ETHNIC and BLOCK for the year prior to the first year of fraud. TBOD and BLOCK showed consistency for two consecutive years. Regarding these

characteristics, the non-fraudulent companies had higher numbers of board members as well as higher percentages of institutional shareholdings than the fraudulent companies. The inconsistency of these results with prior studies may relate to the institutional setting. The ownership structure and way things are done in Malaysia are not the same as other countries, and therefore may have influenced the outcome of the study.

While the results for the earnings management variables were not overwhelming, there was some suggestion on the univariate basis that certain earnings management variables could indicate if a company was at risk of corporate fraud. For the five years studied, GMI, AQI and SGI were consistently significant over the first four years (year‘s t, t-1, t-2 and t-3) in the univariate hypotheses testing. The univariate analysis for year t-1 also indicated that LVI and INVR were significantly different between the two groups, while the univariate analysis for year t-2 showed DSRI was significantly different between the two types of company. Therefore, on a univariate basis, GMI, AQI and SGI of both groups of companies were significantly different where the non-fraudulent companies‘ mean indices for GMI and AQI were higher that the fraudulent companies‘ for the years t, t-1, t-2 and t-4. However, for year t-3, the GMI and AQI mean indices for the non-fraudulent companies were lower than for the fraudulent companies. The SGI mean index for the non-fraudulent companies for years t, t-1, t-3 and t-4 was higher than for the fraud group, but not for year t-2. These results did show some consistency on a univariate basis.

To answer research questions two and four, logistic regression analysis was performed to indicate if there were any relationships between the corporate governance and earnings management variables and the likelihood of corporate fraud. The logistic regression analysis for year t found that TBOD, BODMEET, TENURE and BLOCK were significant indicators in reducing the likelihood of corporate fraud. Analysis of the relationship between corporate governance characteristics, earnings management variables and the likelihood of corporate fraud through logistic regression for year t-1 indicated TBOD, DIROWN, ETHNIC and BLOCK were significant indicators in reducing the likelihood of corporate fraud. TBOD and BLOCK were the two consistently significant corporate governance characteristics in reducing the likelihood of corporate fraud for the two years studied. The results suggested that a higher number of board members (eight at least) contributes to better

control and monitoring of management activities and reduces the likelihood of corporate fraud. This study indicated that a higher the percentage of institutional shareholdings in a company contributes to improved monitoring of companies' activities and could reduce the likelihood of corporate fraud. The logistic regression analysis for the earnings management variables indicated that GMI was consistently a significant predictor for all five years analysed, where the mean index of GMI for the non-fraudulent companies was higher than the fraudulent companies. This could signify that fraudulent companies are highly likely to manipulate their earnings using income-increasing methods. Other studies in this area in other countries have found that fraudulent companies tend to adopt income-decreasing methods in manipulating gross margin. Differences in culture, business practices and legal environment could be contributing factors to this contradictory result. The results of this study highlighted fraudulent Malaysian companies' tendency to adopt income-decreasing methods in manipulating/managing earnings with respect to SGI and AQI is consistent with the findings of Kamarudin et al. (2012) and Ming Chia et al. (2007). The result clearly shows that institutional settings have significant influence over how things are being done. One possible reason for the tendency of company to adopt income decreasing method is to reduce the effect of earnings management in time of distress. During this period of distress normally companies are subject to more scrutiny by regulators.

The last part; the additional analysis on the four new cases shows consistent results for the five variables (TBOD, BODMEET, TENURE, BLOCK and GMI) that was found to have significant with the likelihood of corporate fraud occurrences. Now that the results have been presented, Chapter Seven will summarise and integrate the findings, discuss the implications and limitations of the study, and give some ideas for future research and improvements.

Chapter 7
Conclusion

This final chapter discusses and integrates the findings of the study. This work assessed the usefulness of corporate-published information (e.g. annual reports) in detecting the likelihood of corporate fraud by analysing non-financial (corporate governance characteristics) and financial information (earnings management variables) and their relationship with the likelihood of corporate fraud. The increasing concern over the number of fraud cases in Malaysia has caused doubts about the effectiveness of company governance systems and the reliability of financial reporting (especially in earnings). Hence, this study was carried out to analyse usefulness of published data in highlighting if company is at risk of fraud through analysing the effectiveness of corporate governance variables in reducing the likelihood of corporate fraud and the ability of earnings management indices to indicate if company is at risk of corporate fraud.

The selection of the fraudulent and non-fraudulent samples was a vital part of this study. The samples were selected and matched based on the criteria mentioned in Chapter Five. A sample of fraudulent companies (those that were charged with fraud by the Malaysia Securities Commission between 2003 and 2007) was compared with a control sample (healthy/non-fraudulent companies) to determine if there was any significant difference between the two groups with respect to corporate governance variables. This answered research questions one and three. A further analysis was carried out to determine the significant relationships between the variables and the likelihood of corporate fraud occurrences. A significant relationship indicated the corporate governance variable‘s likelihood to deter corporate fraud, which answered research question two. The same comparison analysis was carried out with respect to the earnings management data to determine the significant differences between the two groups, answering research question three. The earnings management indices were regressed using logistic regression to determine search for any significant relationships with the likelihood of corporate fraud; this answered research question four.

Both univariate and multivariate (logistic regression) analyses were performed to determine the relationships between the dependent (non-fraudulent and fraud companies) and independent variables (corporate governance characteristics and earnings management indices/ratios). Before further analyses were carried out, the data were checked regarding the basic underlying assumptions of logistic regression to ensure that none were violated. Firstly, this chapter summarized the major findings/results. Secondly, the implications of the study are discussed, followed by the limitations and suggestion for future research. The chapter ends with some concluding thoughts on the study.

7.1 Major Findings

This section covers the major findings and results for this research. The main objective of this study was to determine the usefulness of published information in indicating if a company is at risk of corporate fraud. Therefore, this study analysed the corporate governance characteristics and earnings management indices of non-fraudulent and fraudulent companies to look for differences between the two groups and the relationships between the variables and the likelihood of corporate fraud. The discussion of the findings is divided into two sections: the results for the corporate governance variables, and those for the earnings management variables.

7.1.1 Corporate governance variables

Based on the literature review and the Malaysia Code of Corporate Governance best practice 2000, 11 corporate governance hypotheses were developed from 4 corporate governance areas: board of directors‘ characteristics, chairman‘s characteristics, audit committee‘s characteristics and institutional shareholding. The univariate test of differences and logistic regression analysis were used to test the hypotheses and to answer research questions one and three. Analysis and testing covered two years (first year of fraud, called year *t*, and the year prior to the first year of fraud, called year *t-1*) separately.

Research question one was answered by the hypotheses testing for differences for both years. For the first year of fraud, the results provide support for 6 of the 11 corporate governance hypotheses; there were significant differences between the two groups of companies with respect to size of board, frequency of board meetings,

tenure of board chairman, percentage of audit committee members holding outside directorships, frequency of audit committee meetings and institutional shareholdings. Out of these six variables, only frequency of audit committee meetings was significantly different (at the 10% significance level) from year *t* to year *t-1*, where the mean of meetings increased by 1 from 5 in year *t-1*. The slight increase in the number of meetings held by the audit committee could possible indicate that the audit committees had concerns about the companies' financial reporting.

On average, the non-fraudulent companies had a slightly higher number of board members than the fraudulent companies; this could indicate that having at least eight members on the board enhances the governance process. Consistent with the increase in the frequency of audit committee meetings, the fraudulent companies were also found to hold more board meetings in year *t*, which could possibly indicate that they had concerns over the companies' activities or reporting. The average tenure of board chairmen was higher for the non-fraudulent companies, perhaps suggesting that having longer tenure, more experience and better understanding of the company contributes to better governance. The same could be argued with respect to the percentage of institutional shareholdings, where the non-fraudulent companies had a higher percentage of institutional shareholdings than the fraudulent ones.

On the other hand, the results for year *t-1* showed support for only 3 out of 11 corporate governance variables; this indicates that there were significant differences between the non-fraudulent and fraudulent companies with respect to size of board, chairman's ethnicity and institutional shareholdings. The results for size of board and institutional shareholdings indicated that having more members on the board and a higher percentage of institutional ownership could improve governance and control. For the two years analysed, only the size of the board and the percentage of institutional shareholdings remained consistently significant. A detailed investigation into ethnicity showed that the fraudulent companies had fewer Malay chairmen (18%) compared to the non-fraudulent companies (49%). However, it is not fair to say that having a Malay board chairman strengthens company governance. Further investigation needs to be carried out to better understand this variable and its role in effective governance.

To determine the relationships between the corporate governance variables and the likelihood of corporate fraud occurrences, hypothesis testing of relationships was carried out using logistic regression analysis. Only four of the variables were significant predictors of the likelihood of corporate fraud for year's *t* and *t-1*. The significant predictors for year *t* were: size of board, number of board meetings, chairman's tenure and percentage of institutional shareholdings. These four variables were also found to be significantly different in the univariate analysis. The significant predictors for year *t-1* were: size of board, percentage of directors' shareholdings, chairman's ethnicity and percentage of institutional shareholdings. Except for percentage of directors' shareholdings, these variables were also significant in the univariate analysis. However, only size of board and percentage of institutional shareholdings were found to be constantly significant predictors of the likelihood of corporate fraud for the two years studied.

Size of board was found to have a negative relationship with the likelihood of corporate fraud, where an increase in the size of the board would likely reduce the risk of corporate fraud. On average, having eight members on the board was shown to be effective in reducing the likelihood of corporate fraud, which is consistent with Jensen (1993) and Lipton and Lorsch (1992). In this case, size does matter. Having more people on the board may increase efficiency in monitoring and controlling, hence reducing the opportunity for fraudulent activities and increasing the ability to detect any irregularities in the company's reporting.

Frequency of board meetings was found to be positively related to corporate fraud incidences. The logistic regression result indicated that a high frequency of board meetings does not reduce the risk of corporate fraud. The Bursa Malaysia Corporate Governance Guide suggests a minimum of six to eight meetings per year for the board to be effective in monitoring company activities. Surprisingly, this does not seem to be effective. On average the non-fraudulent companies had five meetings a year for both years studied, while the fraudulent companies had nine meetings in year *t* and six in year *t-1*. This higher frequency of board meetings could possibly signal that a company is in distress. This result is consistent with Uzun et al. (2004) and Bedard (2004). The more meetings held in year *t* could also have been due to the fraud charges against the companies by the Malaysia Securities Commission.

This study indicated that the length of the chairmen‘s tenure may have reduced the likelihood of corporate fraud occurrences in year *t*. The average tenure for non-fraudulent companies in year *t* was 10 years, and for fraudulent companies it was 5 years. This evidences a negative relationship between tenure and the likelihood of corporate fraud occurrences; longer tenure reduces the likelihood of corporate fraud. One possible reason for this is that as tenure increases, so does the chairman‘s knowledge and experience of the company‘s affairs, which could lead to better oversight.

The percentage of institutional shareholdings was the strongest predictor of corporate fraud and was consistently significant over the two years. The result showed a negative relationship with corporate incidences, which means a higher percentage of institutional shareholdings likely, reduces the risk of corporate fraud. The average of 41% of institutional shareholding in the non-fraudulent companies (20% more than the average for the fraudulent ones) reduced the likelihood of corporate fraud occurrences. A higher percentage of institutional shareholding subjects the company to more scrutiny (by the institutional shareholders), which leads to better control and monitoring of company and manager activities.

The result for year *t-1* indicated that percentage of directors‘ shareholdings was a significant predictor of the likelihood of corporate fraud occurrences. The result showed that an increase in the percentage of directors‘ shareholdings could reduce the likelihood of corporate fraud. One reason for this could be that directors are more effective in monitoring company activities when they have more interest in the company.

Analysis of year *t-1* also indicated that ethnicity was a significant predictor of corporate fraud, where the risk of corporate fraud was higher when the chairman was non-Malay. However, this finding needs to be investigated further before a firm conclusion can be made. Perhaps a future study could use the case study approach to investigate organizational culture with respect to ethnicity and corporate fraud.

The Bursa Malaysia Listing Requirement paragraph 15.02 states that at least two, or 1/3 (whichever is higher), of the board members should be independent directors. Independent board members play an essential role in ensuring the interests of the minority shareholders are protected. However, on the contrary, this study found that

for both years analysed there was no significant difference in the percentage of independent board members between the non-fraudulent and fraudulent groups. This study also found that the independence of board members was not a significant predictor of corporate fraud, which means that the existence of independent directors does not reduce the likelihood of corporate fraud. On average, both groups of companies complied with the Bursa Malaysia Listing Requirement, having at least 40% independent directors on the company‘s board. This study also found the same results for percentage of independent audit committee members. Both groups of companies had at least two thirds independent audit committee members. The Bursa Malaysia Listing Requirement paragraph 5.10 states that there should be at least three members on the audit committee and the majority should be independent directors. On average, both groups had three audit committee members and two thirds of them were independent directors. Again, in terms of independence, both groups complied with the requirement and corporate governance guidelines. Unfortunately, the requirement and guidelines proved to be ineffective in reducing the likelihood of corporate fraud in Malaysia. Perhaps the required percentage of independent members should be increased in order for this variable to be effective.

The Malaysia Code of Corporate Governance does not make the separation of CEO and chairman mandatory. However, companies are encouraged to separate the two roles, and in the event that the roles are combined, companies must make sure that there is a strong independent element on the board and the decisions to combine the role must be publicly explained. Upon investigation of this dual role, this study determined that more than 80% of companies in both groups separated the roles of CEO and board chairman. It was noted that the separation of these two roles did not increase the effectiveness of corporate governance in corporate fraud deterrence. On average, the percentage of audit committee members holding outside directorships was slightly lower for the fraudulent companies, but the difference was not statistically significant. It seems that holding more outside directorships did not reduce the effectiveness of audit committee members is exercising their duties. It was found that the level of corporate governance compliance was high for both groups of companies. One cannot help but wonder if the suggested corporate governance requirements are really effective in monitoring companies‘ activities, or is the high degree of compliance among companies just a practice of ‗ticking the box‘? This

leads to the question of the usefulness of information published by corporations when a number of key corporate governance characteristics were unable to reduce the likelihood of corporate fraud. The additional findings in section 6.4 indicate that the four corporate governance characteristics (TBOD, BODMEET, TENURE and BLOCK) that were found to have significant relationships with corporate fraud occurrences were consistent in the four additional cases. From the results of this study, it can be concluded that company-published information can still be reliable, but users have to be very careful when digesting the information.

The MCCG 2012's new recommendations on every aspect of governance are continued in the proposed draft of MCCG 2016. However, the recommendations do stress strengthening governance practices. Rather than just following the UK Code of Corporate Governance, it would be effective if the responsible agencies factored in the influence of Malaysian culture and practices to enhance the effectiveness of corporate governance in Malaysian institutions. This is one of the emphasized in the MCCG 2016 draft proposal.

7.1.2 Earnings management variables

In this study, nine earnings management variables' hypotheses were developed and tested. The earnings management variables were the most used indices and ratios based on the most common financial information used in assessing company performance. Nine indices and ratios were calculated and analysed for both groups of companies for five years.

Three of the nine hypotheses tested were found to be consistently significant for the four-year period (years *t*, *t-1*, *t-2* and *t-3*), which means that there was a significant difference between non-fraudulent and fraudulent companies with respect to the three variables. The variables were: gross margin index, assets quality index and sales growth index. This result shows that the fraudulent company tended to engage in income-decreasing method in earnings manipulation, which is in contrast with a number of other studies, e.g. Beneish (1999), Bell and Carcello (2000), and Rosner (2003). The contrast is likely due to the differences in culture, business and legal environment between this study's setting and the settings of the other studies. However, this finding is consistent with the results of Kamarudin et al. (2012), who carried out their study in Malaysia. In year *t-4*, none of the earnings management

hypotheses were supported. One could assume that during this year earnings had not yet been manipulated as the companies still had no financial or performance problems.

These indices can be used as tools for users of financial reports to assess companies‘ performance, even though being significantly different is not necessarily a signal of fraud. But, being prudent with their investment could save them from a more devastating loss in the future. This study also revealed that earnings had been manipulated one to two years before the fraud was discovered. Thus, it is wise for users to also analyse up to two years‘ worth of financial information before the current year, to detect any manipulation. In the year when the fraud was discovered or the company was charged with fraud, companies normally would take corrective actions to lessen the effect of the manipulation, or to some extend cover up the manipulation. For this reason, analysing only one year of company financial data is not sufficient.

Further analysis was carried out to determine the earnings management variables that had significant relationships with the likelihood of corporate fraud occurrences. Only one earnings management variable (gross margin index) was found to be a consistently significant predictor of the likelihood of corporate fraud for the five-year period analysed. This result was consistent with the results of the univariate analysis, where GMI was also found to be significantly different over the period studied, except for year *t*-4. The GMI for fraudulent companies was smaller (lower than 1 index indicates company is practicing income increasing) than non-fraudulent companies, which indicates that company gross profits increase from the year before. The reason for this could be that the company was facing financial problems where sales were increased. Companies could also have engaged in income-increasing actions where cost of sales was decreased. This data or information on the changes of sales and cost of sales should be important to users in monitoring financial information.

AQI and SGI were also significant predictors of the likelihood of corporate fraud occurrences in year‘s *t*-1 and *t*-3, which was consistent with the results of the univariate analysis. As stated earlier, earnings are usually not just manipulated in the year the manipulation is discovered, but this activity starts a year or more before year *t*. Therefore, AQI and SGI are two other indices that could help in assessing the health

of a company. For these two indices, income-decreasing method were adopted to manipulate earnings; hence, any negative changes in sales and current assets should ring an alarm warning users to be extra careful in their assessments of a company's financial information. TATA was found to be a significant predictor of the likelihood of corporate fraud occurrences in year *t*, but was not significantly different between the two groups studied for all five years. Nevertheless, this index deserves to be taken seriously as a predictor of fraud. There is no harm in being overcautious with one's money. A company's working capital should be the centre of attention for this index, as well as their leverage. Lower or negative accruals indicate it is highly likely fraud has been committed. In other studies, a higher index signalled a company was employing income-increasing methods to manage earnings. Per contra, in Malaysia it was the other way round: lower indices were associated with the likelihood of corporate fraud. To conclude this section, this study revealed that GMI, AQI, SGI, TATA and LVI could be good predictors of the likelihood of corporate fraud, and analyses of financial information should incorporate data from at least a three-year period. To some extent, company-published financial information is useful for indicating if a company is at risk of corporate fraud.

Institutional setting without doubt had a significant impact on this study. Being a multicultural society, the ways Malaysian businesses operate is different from other countries. Differences in cultural values and beliefs, legal requirements and environment definitely influence the way things are done and business are managed. The level of transparency among the ethnicities in Malaysia could have an effect on the method of earnings management used. Income-decreasing methods are adopted because companies try to hide the manipulation by lowering earnings gradually.

7.2 Implications

This section explores the potential implications of this study. This topic can be divided into four categories: public policy, corporate policy, accounting policy and potential for future research.

Corporate fraud has severe financial and non-financial consequences. A long battle has been waged against fraud, especially by the MSC, who is responsible for ensuring the integrity of corporate financial reporting in Malaysia. The establishment of the Code of Corporate Governance was designed for this purpose. However, the

effectiveness of corporate governance structures in curbing the incidence of corporate fraud in Malaysia is still not well known. The results of this study shed some light on this. Since corporate governance was established as a control and monitoring mechanism for corporate behaviour, the public at large relies on its ability to be effective. This study proves an empirical relation between certain corporate governance characteristics and the likelihood of corporate fraud.

This study also shows that certain corporate governance characteristics that should be effective in curbing corporate fraud are in fact not effective in Malaysia, namely: the independence of the board of directors. Therefore, more emphasis should be put on improving corporate governance structures. The role of institutional shareholders should be highlighted and they should play more important role in company‘s governance. Multiple directorship of board member seems to be beneficial to company‘s governance in Malaysia. The contribution of knowledge gained from holding multiple directorships could increase director expertise apart from formal training. A more in-depth analysis on the role of institutional theory in the development on corporate governance is valuable for the development of governance policy.

The limitation of director‘s tenure to 9 years is appropriate as knowledge and experience is important apart from formal education and training. This is consistent with the effectiveness of having multiple directorships that reduces the likelihood of corporate fraud occurrences. This shows that the formal education and training is not enough which perhaps could be suggested to the education sector to increase students understanding in financial reporting. The multiracial factor that brought with it culture and values into how business is manage could be one of the reason that directors need experience and knowledge to help them carrying out their duties effectively. The results of this study suggest that it is difficult to gauge the likelihood of fraud by analysing a company‘s financial statements. The results empirically showed that only one index highlighted the relationship between earnings management and the likelihood of corporate fraud. Therefore, the regulatory agencies need to be more rigorous in monitoring the practice of earnings management in Malaysian companies.

For corporations, having a sound and effective corporate governance structure that minimizes the likelihood of corporate fraud will increase shareholder trust and

improve control over management. The results of this study provide useful information for developing corporate governance structures and company policies. For example, rather than just sticking to the Code of Corporate Governance‘s suggested structure, companies might want to consider the role of an independent board of directors in effective monitoring and control. Corporations might also want to improve their audit committee to ensure their effectiveness. Corporate culture and ways things are done need to be more transparent, the top management need to set the tone of good governance. This will be followed by the subordinates which eventually will be a good and ethical culture.

Investors, shareholders and the public at large rely on companies‘ financial information for investment purposes as well as evaluating companies‘ performance. This study produced some empirical evidence that the reliability of corporate financial reporting is jeopardized when earnings are managed to cover financial difficulties/distress. The results indicated that there were only very small differences in the earnings management indices between the two groups studied. Investors and other stakeholders should analyse the institutional setting of the company, to understand how works are being done. Hence this could help in evaluating company‘s financial performance and the reliability of information published.

The empirical results of this study only represent one of many areas of corporate governance structures and earnings management practices. Future research should consider a broader investigation on governance attributes and earnings management indices and how they relate to the likelihood of corporate fraud. This study analysed earnings management indices based on yearly financial information; thus, for future research it might be wise to analyse financial information based on quarterly financial reports. Even though quarterly reports are not audited, they are a source of financial information that can be used to see trends, in particular earnings management trends. This could give some insight into when earnings started being managed or manipulated. Future research should also consider analysing corporate fraud using a case study approach to give a more in-depth understanding of this issue. This could offer a better view on company governance. Apart from adopting a positivist paradigm (as this study did), future researchers could analyse or study this issue from a more critical perspective or from an interpretative view. This could produce more in-depth explanations and understanding of the problems of governance and fraud.

7.3 Limitations

This study had several limitations. Firstly, motivations to commit corporate fraud can be influenced by factors that were beyond control in this study. While careful measurements were taken during the sample matching process (size, industry and time period), other factors such as management style and corporate culture are difficult to measure and could not be controlled. Therefore, it is not the intention of this study to provide a complete and definite explanation of the factors that contribute to corporate fraud. Instead, the intention is to provide information on the effectiveness of certain corporate governance characteristics in reducing the likelihood of corporate fraud and which earnings management indices could highlight the likelihood of corporate fraud in Malaysia. Management style and corporate culture could have influence over the corporate fraud. Perhaps, a further study could be carried out examining the influence of these other factors on fraud.

Secondly, the hidden or secretive nature of fraud itself may have created some sample bias; whereby a fraudulent company that has yet to be uncovered might have unknowingly been included in the non-fraudulent company sample. Although great care was taken to screen the non-fraudulent companies, there is still the possibility of bias in the sample. The possibility that some of the information collected from the fraudulent companies was not completely accurate could also contribute to the problem of bias in the sample. This limitation is noted, however it is not deemed to have had a significant impact on the results.

Also, due to the nature of fraud, the fraudulent sample in this study was indeed in financial distress and therefore there was a high incidence of missing data. This caused the number in the sample to be small. As a result, caution needs to be exercised in generalizing the results of this study. Since the main focus of this study was to determine the usefulness of published information, the source of information focused on was published annual reports. Even though the general notion is that it is easy to access such published information, the fact is this is not true when dealing with a troubled company, including fraudulent companies and financially distressed companies. This issue became a major obstacle that reduced the number in the fraud sample. The unique nature of Malaysia‘s culture and legal environment makes the level of secrecy and confidentiality very high, which also contributed to the small

fraud sample. Nevertheless, corporate fraud is an important issue to be studied in the Malaysian context; therefore, having a small sample does not mean the issue of corporate fraud cannot be examined in Malaysia. The result could become part of the basic understanding of corporate fraud in Malaysia.

Caution should also be taken regarding corporate governance‘s effectiveness and earnings management patterns. There is the possibility that the effectiveness or ineffectiveness of companies‘ corporate governance structures, which lead to better or worse control of earnings management, may not be due to the effectiveness of the governance, but the integrity of the management themselves. Management can be very ethical, resulting in strong and effective governance, or it can be otherwise. Having the perfect code of corporate governance does not ensure the effectiveness of company governance if the people on board themselves do not have strong ethical values.

Manipulation of earnings and acts of fraud are not one-off acts, but rather exhibit a snowball effect. One manipulation/act of fraud leads to another and the impact is brought forward to another period. In many cases the manipulation/fraud is only detected after a few years, when the effect is too big to hide. This is another limitation of this study that should be noted. The study paid much attention to the year fraud was discovered. However, studying the data from a few years before the fraud year could be important and provide more in-depth understanding of this issue.

7.4 Summary and Conclusion

The effectiveness of corporate governance in fraud deterrence is quite complex and not easy to quantify. Effective corporate governance will result in better (if not effective) monitoring and controlling over management activities and corporate reporting. Sound corporate reporting increases the usefulness of published information in decision making. Therefore, more effective corporate governance would give users assurance of the published information‘s usefulness and reliability. The practice of earnings management is difficult to quantify, and it is hard to define the boundaries between managing earnings within the GAAP and violations of GAAP. This study, therefore, only focused on the effectiveness of certain corporate governance characteristics and ability of earnings management variables to highlight if a company is at risk of corporate fraud. The results suggested that many of the

strong corporate governance characteristics put forward were not able to detect corporate fraud occurrences. The results also showed that the practice of earnings management in fraudulent and non-fraudulent companies is almost the same, which suggests that the reliability of financial numbers could be questionable. The findings suggested that the development of corporate governance should be tailored to the company‘s unique needs and environment, and should not just focus on meeting the regulatory requirements. In particular, board and audit committee members should be more effective in assessing and evaluating financial reports. This study also suggests that other corporate governance characteristics and earnings management indices should be investigated to determine their relationships with the likelihood of corporate fraud. Companies‘ published information, to a certain extent, is useful provided that users exercise caution in digesting it, and know what to look for and how to interpret the information. Some of the variables that were found to be significant in this study could provide guidance for users in assessing companies‘ published information and performance.

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Appendix

Appendix 1: Earnings management models based on earnings accruals

Earnings Management Models

Model	Measurement
Healy Model	Healy (1985) tests earnings management by comparing mean total accruals scaled by lagged total assets across the earnings management partitioning variable. The different in his study from the others is he predicts that systematic earnings management occurs in every period. He divides the sample into three groups, with one group of earnings predicted to be managed upwards (as estimation period) and two groups of earnings predicted to be managed downwards (as event period). Inferences are then made through pairwise comparisons of the mean total accruals in the estimation period group to the mean total accruals for each of the event period groups. The mean total accruals from the estimation period then represent the measure of nondiscretionary accruals. The model for nondiscretionary accruals is: $$\mathbf{NDA}_{\tau} = \frac{\sum_{t} TA_t}{T}$$ Where: NDA = estimated nondiscretionary accruals; TA = total accruals scaled by lagged total assets; t = 1, 2, …T is a year subscript for years included in the estimation period; and τ = a year subscript indicating a year in the event period.
De Angelo Model	De Angelo tests for earnings management by computing first differences in total accruals and by assuming that the first differences have an expected value of zero under the null hypothesis of no earnings management. The model uses last period‘s total accruals (scaled by lagged total assets) as the measure of nondiscretionary accruals. The model for nondiscretionary accruals is: $$\mathbf{NDA}_{\tau} = \mathbf{TA}_{\tau-1}$$ The model can be viewed as a special form of the Healy Model, where estimation period for nondiscretionary accruals is restricted to the previous year's observation. A common feature of the Healy and DeAngelo models is that they both use total accruals from the estimation period as proxy for expected nondiscretionary accruals. If nondiscretionary accruals are constant over time and discretionary accruals have a mean of zero in the estimation period, then both the Healy and DeAngelo models will measure nondiscretionary accruals without error. If, however, nondiscretionary accruals change from period to period, then both models will tend to measure nondiscretionary accruals with error.

Jones Model	Jones' (1991) model relaxes the assumption that nondiscretionary accruals are constant and attempts to control for the effect of changes in a firm's economic circumstances on nondiscretionary accruals. The Jones model for nondiscretionary accruals in the event year is: $\mathbf{NDA}_{\tau} = \alpha_1(\mathbf{1/A}_{\tau-1}) + \alpha_2(\Delta\mathbf{REV}_{\tau}) + \alpha_3(\mathbf{PPE}_{\tau})$, Where: $\Delta\mathrm{REV}_{\tau}$ = revenues in year τ less revenues in year $\tau-1$ scaled by total assets at $\tau-1$; PPE_{τ} = gross property, plant and equipment in year τ scaled by total assets at $\tau-1$; $\mathrm{A}_{\tau-1}$ = total assets at $\tau-1$; and $\alpha_1, \alpha_2, \alpha_3$ = firm-specific parameters. Estimates of the firm-specific parameters, $\alpha_1, \alpha_2, \alpha_3$ are generated using the following model in the estimation period: $\mathbf{TA}_{t} = \mathbf{a}_1(\mathbf{1/A}_{\tau-1}) + \mathbf{a}_2(\Delta\mathbf{REV}_{\tau}) + \mathbf{a}_3(\mathbf{PPE}_{\tau}) + \upsilon_t$ Where a_1, a_2 and a_3 denote the OLS estimates of α_1, α_2 and α_3 and TA is total accruals scaled by lagged total assets.
Modified Jones Model	This modified model is designed to eliminate the conjectured tendency of the Jones model to measure discretionary accruals with error when discretion is exercised over revenues. The nondiscretionary accruals are estimated during the event period as: $\mathbf{NDA}_{\tau} = \alpha_1(\mathbf{1/A}_{\tau-1}) + \alpha_2(\Delta\mathbf{REV}_{\tau} - \Delta\mathbf{REC}_{\tau}) + \alpha_3(\mathbf{PPE}_{\tau})$, Where: $\Delta\mathrm{REC}_{\tau}$ = net receivables in year τ less net receivables in year $\tau-1$ scaled by total assets at $\tau-1$.
Industry Model	The Industry model is similar to the Jones model in that it relaxes the assumption that nondiscretionary accruals are constant over time. Instead of attempting to directly model the determinants of the nondiscretionary accruals, the Industry model assumes that variation in the determinants of nondiscretionary accruals is common across firms in the same industry. The nondiscretionary accruals model is: $\mathbf{NDA}_{\tau} = \gamma_1 + \gamma_2\,\mathbf{median}_1(\mathbf{TA}_{\tau})$, Where: $\mathrm{median}_1(\mathrm{TA}_{\tau})$ = the median value of total accruals scaled by lagged assets for all non-sample firms in the same 2-digit SIC code. The firm-specific parameters γ_1 and γ_2 are estimated using OLS on the observations in the estimation period.

Appendix 2: Correlation matrix of corporate governance variables

Correlation Coefficient Analysis of Corporate Governance Variables for Year *t*

Variable	Spearman's Rho	INBOD	TBOD	BODMEET	DIROWN	DUALITY	TENURE	ETHNIC	INDAC	OUTDIR	ACMEET	BLOCK	NF/F
INBOD	Correlation	1.000											
	Sig. (2-tailed)												
TBOD	Correlation	-0.273**	1.000										
	Sig. (2-tailed)	0.000											
BODMEET	Correlation	-0.056	0.014	1.000									
	Sig. (2-tailed)	0.483	0.860										
DIROWN	Correlation	-0.034	0.051	-0.263**	1.000								
	Sig. (2-tailed)	0.670	0.518	0.001									
DUALITY	Correlation	0.011	-0.080	-0.078	0.173*	1.000							
	Sig. (2-tailed)	0.886	0.313	0.325	0.029								
TENURE	Correlation	-0.236**	0.059	-0.164*	0.180*	0.105	1.000						
	Sig. (2-tailed)	0.003	0.458	0.038	0.023	0.185							
ETHNIC	Correlation	0.209**	0.051	0.023	-0.179*	-0.296**	-0.206**	1.000					
	Sig. (2-tailed)	0.008	0.522	0.774	0.024	0.000	0.009						
INDAC	Correlation	0.254**	0.132	-0.003	0.029	-0.027	-0.032	0.247**	1.000				
	Sig. (2-tailed)	0.001	0.096	0.973	0.713	0.737	0.692	0.002					
OUTDIR	Correlation	0.169*	0.038	-0.009	-0.116	-0.026	-0.083	0.126	0.440**	1.000			
	Sig. (2-tailed)	0.032	0.637	0.908	0.145	0.743	0.299	0.112	0.000				
ACMEET	Correlation	-0.098	-0.145	0.559**	-0.085	0.030	-0.093	-0.075	-0.137	0.026	1.000		
	Sig. (2-tailed)	0.217	0.67	0.000	0.282	0.709	0.244	0.346	0.085	0.747			
BLOCK	Correlation	-0.066	0.074	0.177*	0.651**	-0.137	-0.013	0.133	-0.142	0.075	0.042	1.000	
	Sig. (2-tailed)	0.404	0.349	0.025	0.000	0.084	0.867	0.092	0.072	0.348	0.595		
NF/F	Correlation	0.023	-0.221**	0.234**	-0.097	0.014	-0.097	-0.097	-0.097	-0.183*	0.243**	-0.201*	1.000
	Sig. (2-tailed)	0.769	0.005	0.003	0.220	0.858	0.223	0.223	0.223	0.020	0.002	0.011	

Correlation Coefficient Analysis of Corporate Governance Variables for Year *t-1*

Variable	Spearman's Rho	INBOD	TBOD	BODMEET	DIROWN	DUALITY	TENURE	ETHNIC	INDAC	OUTDIR	ACMEET	BLOCK	NF/F
INBOD	Correlation	1.000											
	Sig. (2-tailed)												
TBOD	Correlation	-0.290**	1.000										
	Sig. (2-tailed)	0.000											
BODMEET	Correlation	-0.146	0.000	1.000									
	Sig. (2-tailed)	0.066	0.999										
DIROWN	Correlation	-0.011	0.040	-0.247**	1.000								
	Sig. (2-tailed)	0.893	0.617	0.002									
DUALITY	Correlation	0.091	-0.137	-0.084	0.214**	1.000							
	Sig. (2-tailed)	0.254	0.084	0.289	0.007								
TENURE	Correlation	-0.218**	0.048	-0.126	0.136	0.141	1.000						
	Sig. (2-tailed)	0.006	0.549	0.113	0.086	0.076							
ETHNIC	Correlation	0.209**	0.040	0.143	-0.196*	-0.301**	-0.126	1.000					
	Sig. (2-tailed)	0.008	0.620	0.072	0.013	0.000	0.113						
INDAC	Correlation	0.137	0.245**	-0.044	0.003	-0.098	-0.154	0.090	1.000				
	Sig. (2-tailed)	0.084	0.002	0.577	0.971	0.218	0.051	0.256					
OUTDIR	Correlation	0.059	0.156*	-0.055	-0.239**	-0.037	-0.120	0.016	0.316**	1.000			
	Sig. (2-tailed)	0.456	0.049	0.488	0.002	0.642	0.130	0.843	0.000				
ACMEET	Correlation	-0.126	-0.110	0.529**	-0.114	0.005	-0.038	0.061	-0.016	-0.017	1.000		
	Sig. (2-tailed)	0.114	0.166	0.000	0.152	0.954	0.636	0.444	0.843	0.827			
BLOCK	Correlation	-0.074	0.051	0.195*	0.678**	-0.199*	-0.036	0.196*	0.049	0.208**	0.036	1.000	
	Sig. (2-tailed)	0.354	0.057	0.014	0.000	0.012	0.648	0.013	0.535	0.008	0.649		
NF/F	Correlation	0.095	-0.163*	0.075	-0.042	0.049	-0.116	-0.156*	-0.062	-0.104	0.031	-0.222*	1.000
	Sig. (2-tailed)	0.231	0.040	0.347	0.600	0.539	0.145	0.049	0.433	0.191	0.701	0.005	

*,** denote significances at the 5% and 1% levels, respectively.

Appendix 3: Tolerance and VIF results of corporate governance variables

Tolerance and VIF Results of Corporate Governance Variables for Years *t* and *t-1*

Variable	Year *t*		Year *t-1*	
	Tolerance	**VIF**	**Tolerance**	**VIF**
INBOD	0.782	1.279	0.748	1.337
TBOD	0.878	1.139	0.804	1.243
BODMEET	0.428	2.337	0.683	1.465
DIROWN	0.503	1.989	0.526	1.900
DUALITY	0.888	1.127	0.837	1.195
TENURE	0.861	1.161	0.924	1.082
ETHNIC	0.782	1.279	0.799	1.252
INDAC	0.670	1.493	0.863	1.158
OUTDIR	0.762	1.313	0.888	1.127
ACMEET	0.426	2.349	0.698	1.432
BLOCK	0.490	2.040	0.507	1.974

Appendix 4: Correlation matrix of earnings management variables

Correlation Matrix for Earnings Management for Year *t*

VARIABLES		DSRI	GMI	AQI	SGI	TATA	DEPI	LVI	INVI	INVSI	NF/F
DSRI	Correlation Coefficient	1.000									
	p										
GMI	Correlation Coefficient	-0.015	1.000								
	p	0.849									
AQI	Correlation Coefficient	-0.004	-0.029	1.000							
	p	0.960	0.712								
SGI	Correlation Coefficient	-0.258**	0.289**	0.253**	1.000						
	p	0.001	0.000	0.001							
TATA	Correlation Coefficient	0.104	0.113	-0.133	-0.046	1.000					
	p	0.190	0.154	0.094	0.567						
DEPI	Correlation Coefficient	0.010	0.170*	0.046	0.026	-0.045	1.000				
	p	0.898	0.032	0.566	-0.741	0.576					
LVI	Correlation Coefficient	0.261**	0.080	-0.012	0.200*	-0.395**	0.166*	1.000			
	p	0.001	0.313	0.882	0.011	0.000	0.036				
INVI	Correlation Coefficient	0.058	0.106	-0.097	0.364**	-0.015	0.097	0.264**	1.000		
	p	0.468	0.182	0.224	0.000	0.851	0.220	0.001			
INVSI	Correlation Coefficient	0.245**	-0.133	0.083	-0.335**	0.042	0.083	0.172*	0.670**	1.000	
	p	0.002	0.093	0.294	0.000	0.598	0.300	0.030	0.000		
NF/F	Correlation Coefficient	-0.018	-0.186*	-0.020	-0.154	-0.078	-0.056	0.085	-0.080	0.020	1.000
	p	0.817	0.018	0.801	0.052	0.325	0.479	0.284	0.312	0.806	

Correlation Matrix for Earnings Management for Year *t-1*

VARIABLES		DSRI	GMI	AQI	SGI	TATA	DEPI	LVI	INVI	INVSI	NF/F
DSRI	Correlation Coefficient	1.000									
	p										
GMI	Correlation Coefficient	-0.030	1.000								
	p	0.711									
AQI	Correlation Coefficient	-0.156*	-0.043	1.000							
	p	0.050	0.594								
SGI	Correlation Coefficient	-0.224**	0.192*	0.090	1.000						
	p	0.004	0.015	0.256							
TATA	Correlation Coefficient	0.180*	-0.079	-0.141	-0.163*	1.000					
	p	0.023	0.320	0.076	0.039						
DEPI	Correlation Coefficient	0.148	0.028	-0.195*	0.005	-0.105	1.000				
	p	0.61	0.723	0.013	0.946	0.186					
LVI	Correlation Coefficient	0.000	0.177*	-0.059	0.351**	-0.460**	0.092	1.000			
	p	0.999	0.025	0.460	0.000	0.000	0.246				
INVI	Correlation Coefficient	0.074	0.040	-0.021	0.257**	0.074	0.057	0.247**	1.000		
	p	0.353	0.613	0.792	0.001	0.353	0.472	0.002			
INVSI	Correlation Coefficient	0.194*	-0.117	-0.078	-0.362**	0.145	0.034	0.027	0.724**	1.000	
	p	0.014	0.139	0.327	0.000	0.068	0.669	0.737	0.000		
NF/F	Correlation Coefficient	-0.049	-0.110	-0.282**	-0.215**	-0.035	-0.005	0.133	-0.172*	-0.084	1.000
	p	0.534	0.167	0.000	0.006	0.660	0.955	0.093	0.029	0.290	

Correlation Matrix for Earnings Management for Year *t-2*

VARIABLES		DSRI	GMI	AQI	SGI	TATA	DEPI	LVI	INVI	INVSI	NF/F
DSRI	Correlation Coefficient	1.000									
	p										
GMI	Correlation Coefficient	0.135	1.000								
	p	0.089									
AQI	Correlation Coefficient	-0.017	0.076	1.000							
	p	0.830	0.336								
SGI	Correlation Coefficient	-0.161*	0.232**	-0.004	1.000						
	p	0.041	0.003	0.956							
TATA	Correlation Coefficient	0.051	0.025	-0.045	-0.038	1.000					
	p	0.522	0.751	0.568	0.634						
DEPI	Correlation Coefficient	0.169*	0.050	0.051	0.188*	0.116	1.000				
	p	0.033	0.533	0.524	0.017	0.144					
LVI	Correlation Coefficient	0.193*	-0.027	-0.073	0.193*	0.451**	-0.054	1.000			
	p	0.015	0.739	0.362	0.001	0.000	0.500				
INVI	Correlation Coefficient	0.157*	-0.032	-0.012	0.268**	0.048	0.018	0.226**	1.000		
	p	0.047	0.689	0.882	0.001	0.550	0.818	0.004			
INVSI	Correlation Coefficient	0.281**	-0.191*	0.044	-0.318**	0.021	0.134	0.113	0.752**	1.000	
	p	0.000	0.016	0.584	0.000	0.788	0.091	0.154	0.000		
NF/F	Correlation Coefficient	0.177*	-0.346**	-0.169*	-0.217**	0.079	-0.076	0.053	-0.062	0.029	1.000
	p	0.025	0.000	0.032	0.006	0.318	0.342	0.508	0.434	0.719	

Correlation Matrix for Earnings Management for Year *t-3*

VARIABLES		DSRI	GMI	AQI	SGI	TATA	DEPI	LVI	INVI	INVSI	NF/F
DSRI	Correlation Coefficient	1.000									
	p										
GMI	Correlation Coefficient	-0.034	1.000								
	p	0.666									
AQI	Correlation Coefficient	0.053	0.083	1.000							
	p	0.506	0.298								
SGI	Correlation Coefficient	-0.342**	0.228**	0.097	1.000						
	p	0.000	0.004	0.221							
TATA	Correlation Coefficient	0.077	0.117	0.425**	-0.097	1.000					
	p	0.334	0.139	0.000	0.224						
DEPI	Correlation Coefficient	0.014	0.097	0.083	0.038	0.127	1.000				
	p	0.858	0.224	0.297	0.631	0.109					
LVI	Correlation Coefficient	0.008	0.137	-0.006	0.332**	-0.207**	0.111	1.000			
	p	0.921	0.083	0.944	0.000	0.008	0.163				
INVI	Correlation Coefficient	0.027	0.107	-0.055	0.267**	-0.093	0.061	0.384**	1.000		
	p	0.738	0.180	0.492	0.001	0.241	0.440	0.000			
INVSI	Correlation Coefficient	0.190*	-0.022	-0.020	-0.305**	0.004	0.054	0.213**	0.731**	1.000	
	p	0.016	0.783	0.804	0.000	0.961	0.501	0.007	0.000		
NF/F	Correlation Coefficient	-0.033	-0.075	0.234**	-0.123	0.011	0.057	0.010	-0.128	-0.001	1.000
	p	0.675	0.348	0.003	0.122	0.885	0.470	0.896	0.107	0.987	

Correlation Matrix for Earnings Management for Year *t-4*

VARIABLES		DSRI	GMI	AQI	SGI	TATA	DEPI	LVI	INVI	INVSI	NF/F
DSRI	Correlation Coefficient	1.000									
	p										
GMI	Correlation Coefficient	0.009	1.000								
	p	0.909									
AQI	Correlation Coefficient	-0.018	-0.015	1.000							
	p	0.821	0.848								
SGI	Correlation Coefficient	-0.267**	0.274**	-0.091	1.000						
	p	0.001	0.000	0.254							
TATA	Correlation Coefficient	0.026	0.145	-0.719**	0.142	1.000					
	p	0.745	0.067	0.000	0.074						
DEPI	Correlation Coefficient	0.058	0.196*	-0.038	0.028	0.042	1.000				
	p	0.466	0.013	0.630	0.728	0.598					
LVI	Correlation Coefficient	0.204**	0.106	0.013	0.258**	-0.190*	0.227**	1.000			
	p	0.010	0.183	0.866	0.001	0.16	0.004				
INVI	Correlation Coefficient	-0.009	-0.106	0.040	0.152	-0.053	-0.029	0.189*	1.000		
	p	0.909	0.181	0.613	0.055	0.505	0.720	0.17			
INVSI	Correlation Coefficient	0.216**	-0.281**	0.122	-0.505**	-0.160	-0.002	0.017	0.687**	1.000	
	p	0.006	0.000	0.125	0.000	0.043	0.980	0.835	0.000		
NF/F	Correlation Coefficient	-0.105	-0.121	0.037	-0.009	-0.125	-0.056	0.042	0.010	0.011	1.000
	p	0.188	0.126	0.645	0.912	0.116	0.483	0.598	0.901	0.885	

Appendix 5: Tolerance and VIF results for earnings management variables

Tolerance and VIF Results for Years *t, t-1, t-2, t-3 and t-4*

Variables		DSRI	GMI	AQI	SGI	TATA	DEPI	LVI	INVR	INVSR
Year *t*	Tolerance	0.907	0.757	0.820	0.797	0.864	0.828	0.774	-	0.963
	VIF	1.103	1.320	1.219	1.254	1.157	1.208	1.293	-	1.039
Year *t-1*	Tolerance	0.883	0.930	0.641	0.063	0.845	0.833	0.623	0.009	0.008
	VIF	1.133	1.076	1.560	15.869	1.183	1.200	1.606	109.138	119.382
Year *t-2*	Tolerance	0.888	0.951	0.673	0.901	0.790	0.643	0.768	-	0.981
	VIF	1.127	1.052	1.486	1.110	1.266	1.556	1.303	-	1.019
Year *t-3*	Tolerance	0.905	0.927	0.974	0.890	0.825	0.905	0.784	-	0.990
	VIF	1.105	1.079	1.027	1.123	1.212	1.105	1.275	-	1.010
Year *t-4*	Tolerance	0.878	0.889	0.940	0.052	0.741	0.861	0.766	0.017	0.015
	VIF	1.139	1.125	1.064	19.358	1.349	1.162	1.305	59.479	66.559